

*ABANDONWARE, COMMERCIAL EXPATRIATION, AND
POST-COMMODITY FAN PRACTICE:
A STUDY OF THE SEGA DREAMCAST*

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Abstract

This thesis explores the nature of digital gaming platforms once they have been expatriated from the consumer marketplace and have been relegated to obsolescence. In this state, abandonware becomes a site for creative interventions by active audiences, who exploit, hack and modify these consoles in order to accommodate a range of creative practices.

As part of the digital toolkit for fan production, the Sega Dreamcast has become a focal point for fan based video game remix practices, whereby fan creators appropriate imagery and iconography from popular media to create new works derivative of these franchises. These fan practices subvert the proprietary protocols of digital platforms, re-contextualizing them as devices for creative intervention by practitioners, who distribute their works and the knowledge necessary to produce them, through online communities.

Key words: platform studies, fan practices, hacking, modding, abandonware, Sega Dreamcast

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INTRODUCTION

As digital platforms such as the Sony Playstation, the Microsoft Xbox, and the Nintendo Wii become increasingly closed and proprietary, a study of the practices which subvert the proprietary protocols of these platforms is crucial in understanding the function of technology in culture. Digital gaming devices, when released to consumer markets, contain a specific set of interactions designed by their manufacturers. These devices are often regarded as obfuscated "black boxes"; their inner operations are hidden and mysterious to their users. The phenomenon of the black box of digital devices is well entrenched in consumer gaming culture, with many consumers and fans succumbing to the mythology of the black box by regarding gaming consoles as "fetishized [and] revered" (Catanese, 2003, 350) objects. This fetishistic preoccupation positions digital gaming platforms as "objects of worship which exist at the thriving heart of the culture" (ibid). This reverence is created both through fan cultures centred on a particular platform, as well as the historicized "intensification and acceleration in the technological, cultural and marketing circuits of the game business" (Kline, Dyer-Witherford, & DePeuter, 2003,128).

Corporations responsible for the manufacture and distribution of these devices create strict controls not only "of the production, but also of consumption" (Dyer-Witheford, et al. 118) of media content on these devices, locking consumers out of deeper methods of interaction. These locks define initial characteristics of the platform, while hacking, modifying, and other forms of digital subversion contribute to the redefinition of digital platforms. Within game studies, accounts of industrial histories of the development of digital gaming platforms, their content, and the corporations that produced them are commonplace. While there is an emerging discourse engaged in discussing the histories of creative computational subcultures such as the DemoScene and the chipmusic scene

(see, Yablsey (2007), Tomszack (2008), Carlsson (2010), there has been little discussion centered around fan practices of digital gaming platforms once they have been discarded by the gaming industry.

As branded consumer objects, digital gaming consoles are devices which see strict control over gamer interactions and participation. While the "constraints on interactivity are technological" (Jenkins, 2008, 137), the means by which consumers participate in cultures surrounding a device are "shaped by social and cultural protocols" (ibid). Using unique combinations of hardware and software, gaming consoles often lock out gamers from their underlying operations, leaving them to use the device solely for the consumption of digital games and other media. In conjunction with this technological strategy, console manufacturers enact strict licensing agreements and aggressive marketing campaigns to situate these platforms within an ongoing narrative of technological progress and innovation. All of which serves to promote a gaming culture where platform manufacturers create "a world where gatekeepers have unprecedented power" (Jenkins 2008, 18). While the majority of gaming culture succumbs to these technological, cultural, and litigious powers of the gaming industry, fan subcultures often circumvent the power held by these corporations.

Henry Jenkins notes the fallacy of the black box: "it reduces media change to technological change" (Jenkins, 2008, 15), an ideology connected to the gaming industry's "construction of an economy of perpetual innovation and upgrade" (Newman, 2013, 88). The phenomenon of upgrade culture within digital gaming is well documented; it is the history of the culture narrated through the creation and distribution of the next technological marvel. Most popular accounts of gaming's history discuss the creation of new games and devices situated within an industrial model of creative production. Omitted from these historical accounts, however, are the myriad of fan

practices and appropriations that exist as part of the spectrum of gaming culture. What emerges is an institutional history, one which is preoccupied with the innovations and notable contributions of game makers, and situated on a timeline of technological progression. These sanctioned practices, often committed under the licensing strata of console manufacturers, dominate the popular historical discourse of the medium's history.

Historical accounts of gaming platforms and their software titles are inextricably tied to their shelflife in the consumer marketplace. Narratives of a platform or a specific game's creation are recounted through discussions of their innovation or commercial and critical success as a consumer commodity. There is little discussion in popular accounts of gaming's history of the state of gaming platforms once they have been expatriated from the consumer marketplace. As newer platforms emerge to replace the old, the common invocation of "supersession and obsolescence" (Newman, 2013, 88) relegates previous gaming platforms to a post-commodity state. It is in the post-commodity state that official historical recantations of a gaming platform ceases.

Originally acting as a descriptor for obsolete digital software, abandonware is a term which encompasses all forms of commercially expatriated digital technologies, both hardware and software. Once a commercial device or piece of software is no longer supported by the parent company that manufactured these goods, it is left abandoned, and as such, these corporations turn their attention to marketing and controlling their latest gaming consoles. However, though unattended by their manufacturers, these digital platforms do not simply vanish from the culture, but re-emerge through participatory practices of gaming fan cultures. The history of these objects does not end; rather, it lives on through fan practices. Abandonware finds new life through fan created secondary collectors markets (such as specialty retail stores, online shops, and auctions), which serve to reinforce the canonization of obsolete gaming technologies and through fan

culture's creative appropriation of a digital platform. Often these appropriations emerge through game software piracy practices, as well as fan based creation through new, modified and hacked games.

Through these participatory fan cultures, gaming platforms relegated to the category of abandonware have become "the artistic equivalent of a cargo cult; a junked technology, abandoned by its manufacturer, found its way into unanticipated but highly dedicated hands" (Jenkins, 2008, 154). Jenkins' concept of the cargo cult is crucial in understanding the ways in which forgotten and abandoned devices get exploited, modified and appropriated by fan cultures. Platform specific fan subcultures emerge, each with its own set of creative practices, determined by the specific hardware and software configurations of the object of its fandom.

Within game studies, platform studies is a field which has emerged to directly address the ways in which a digital platform determines specific creative practices, as well as investigate the ways in which a platform can be understood to be situated in culture. While platform studies has emerged as a means of discussing how digital technologies become situated in culture, investigations of the platform in states of abandonware have thus far been omitted from these examinations. Ian Bogost and Nick Montfort note that "little work has been done on the hardware and software of platforms influences, facilitates or constrains particular forms of computational expression" (2009, 3). As a subfield of game studies, platform studies has been largely preoccupied with gaming platforms in their states as commercial and consumer devices. By focusing on acts of creative computation for specific platforms through industrial models of production, the scholarship to date has participated in reinforcing the historical narratives of innovation commonplace in the gaming industry. While attempting to elucidate the creative conditions of specific platforms, these analyses explore the technological aspects of

creative interaction with a platform, if only through sanctioned practices. The larger fan based social and cultural factors that determine platform based participation are either omitted from these investigations, or are framed as aberrant behaviours, that is, as exceptions rather than the rule. This perspective serves only to restate the commercial identity of digital platforms as monolithic objects, already situated within gaming history's narrative of innovation. However, participatory practices provide insight into the means by which this perceived monolithic, fixed state of a platform can be disrupted, highlighting a fluid, rather than fixed nature of a platform's cultural definitions. Through these practices, fans create new strata of interactions and interpretations in relation to digital platforms.

In order to understand the shifting nature of the means by which platforms are defined in culture, an examination of abandonware provides new insight into the shifting relationship between digital platforms and their users. By delving into the inner workings of the hardware and software, these hackers and creators change their relationship to the platform. No longer relegated to a prescribed method of interaction (that is, the playing of commercially released video games), they become engaged in a practice which seeks to open the "black box" of the platform, understand its complexities, and create new tools for others to use in order to manipulate the various operations of the platform. By charting the "subversive potentialities [which] exist at the very heart of the technological" (Dyer-Witford, et al. 2003, 230), or the specific technological conditions of a digital platform which hackers and fan culture exploit and modify, alternative historical narratives begin to emerge.

Communities surrounding the modification and piracy of digital platforms thrive in states of abandonware. It is only through a thorough investigation of the platform focusing on both the consumer and the post-consumer device that a nuanced

understanding of the platform's role in culture can emerge. As users learn more about digital technologies and learn how to manipulate them, their relationships to the platform shift. Not only do these shifts change the methods of user interaction with a platform, but they also change the cultural conditions of the platform. What was once a device designed for the consumption of goods created by the media entertainment industry becomes a site for a range of creative digital interventions.

While the study of any number of digital platforms could offer insight into these processes, this thesis will focus on the Sega Dreamcast gaming console. Using the Dreamcast as a case study, I will investigate the shifting nature of digital platforms from consumer device through to commercial expatriation into the state of abandonware. Rather than dwelling on a historical account of the platform during its consumer lifespan, my focus will be the post-consumer practices in which fans engaged in once the Dreamcast was expatriated from the consumer marketplace. In this regard, my platform study of the Dreamcast situates itself not as a contribution to the historical discourse of innovation in past consumer devices, but rather as an account of a device that is the locus of a thriving community of creative practitioners.

As a historical and technological examination of these practices, the primary sources for this research originated within online digital communities who participate and engage in Dreamcast piracy, hacking, and modification. Charting the history of these practices through a direct investigation of the discussions and documents created by their practitioners becomes illustrative of alternate histories within gaming culture. This history begins in tandem with the rise of the Dreamcast as a consumer platform, but continues well beyond the device's position as a commercial device.

This examination will begin by documenting the history of piracy practices centered on the Dreamcast. These enterprising hackers and tinkerers who cracked open the black box of the console in order to learn about, exploit, and modify its underlying operations, as a means of illegally copying Dreamcast game titles. The knowledge these practitioners gained and shared through online communities catalyzed further practices of creative appropriation for the console. The legacy left by Dreamcast pirates produced a knowledge culture that enabled new works to be created by fans, who began to modify existing games by replacing an existing game's media content with their own. Through sharing their knowledge using wikis, forums, and websites, these creative practitioners mark the first instance of a Dreamcast centric remix practice, a subculture still active over ten years after the console's expatriation from contemporary gaming culture.

By accounting for the history of these practices, I argue that participatory cultures inscribe new cultural values and meanings upon the digital platforms that are the locus of their creative endeavours. These fan hackers, modders, and remixers fundamentally alter the ways in which they interact with a device, and as a result, alter their relationships to them. By outlining this movement, it is clear that platforms are not the closed "holy objects" (Cantanese, 2003, 356) of gaming cultures. Rather, they are devices defined by the relationships to their users, which exist in a state of flux, open to interpretation, situated on a spectrum of potential definitions.

In order to provide a historical context to this analysis, Chapter 1 contains a critical literature review of several scholarly disciplines, which provide the foundation for my research. Beginning with a review of platform studies, I explore how the methodology of platform studies has been employed to date. While the discipline has largely focused on sanctioned developments in the gaming industry, I examine how the method can be employed to investigate digital platforms once expatriated from consumer markets.

Following this is an account of the study of fan cultures and participatory audiences, as a means of discussing the cultural economies of fan practices and their relationship to the franchises that are the objects of their fandom. Also included in this section is an examination of computer gaming modding practices, which provides the foundational scholarship in active video game fan cultures. The literature review concludes with an examination of digital gaming devices and their shifting value relationships as commodity objects. This section offers an examination of foundational concepts of commodity and value, as well as the ways in which the perceived value of digital gaming technologies alter over time as they move through various categories of commodity, until finally relegated to the category of abandonware.

Chapter 2 offers an overview of the methodological concerns of this investigation. In this chapter, I outline how I plan on employing my analysis of platform specific fan cultures through an examination of the history of their practices and their relationship to platform studies methodology. In addition, I discuss the research methods used in gleaning knowledge from these fan cultures, and the challenges in charting the history of an online community that originated a decade ago. This chapter theorizes a means of applying the platform studies method to the study of abandoned and obsolete technologies.

Chapter 3 offers a brief historical account of the Sega Dreamcast console, in order to place it in the context of Dreamcast centered piracy practice and the creative fan production centered on the console. In this chapter, I focus on the unique technological properties of the Dreamcast that fan pirates and hackers either exploited or circumvented in order to illegally copy Dreamcast software titles. Where other platform studies examine the unique technological features of a platform as a means of discussing its position in the larger history of innovation of the medium, this chapter examines the

unique properties that made the console prone to subversive activities. These unique technological vulnerabilities lie at the heart of burgeoning fan practices centered on the Dreamcast.

In Chapter 4, I trace and analyze the history of piracy practices on the Dreamcast. Focusing on the technological, as well as the social, and cultural considerations of these practices, I outline the origins of the fan knowledge cultures that provided the necessary foundation for other fan practices to emerge on the platform. This chapter explores the archive of fan knowledge produced by various hacking groups and examines how these groups shared their knowledge with the fan subculture, which appropriated the Dreamcast to create new works. By providing a foundational understanding of the Dreamcast's inner operations, Dreamcast piracy is the primary practice which enabled other methods of fan production on the console.

Chapter 5 offers an investigation into several forms of fan creative practice, which is born from both the legacy of Dreamcast piracy, as well as other fan based remix cultures. The communities engaged in these practices rework and recontextualize the iconography, characters, and settings from a wide array of media properties and integrate them into new games for the Dreamcast. This chapter discusses the specific technological considerations of these practices, as well as the social structures of the communities which engage in these practices. By examining several notable works from Dreamcast remixers, I explore the ways in which these works are created and distributed through these communities, as well as how these communities provide feedback and opportunities for greater participation in the culture.

Lastly, the conclusion offers a summation of the research in relationship to the literature review, as well as posing critical links to contemporary relationships between

fans, hackers, pirates, and the gaming industry. The often tense relationships between the industry and fan makers are complicated and are continual sites of conflict between these two stakeholders. I offer a discussion of contemporary examples of these relationships and issue a call for the deeper study of other abandoned gaming consoles as a means of creating a more sophisticated understanding of digital platforms and their positions in culture.

CHAPTER 1

Literature Review

1.1 Introduction

Given the nature and scope of gaming culture and the growth of the medium of digital games in the past four decades, the examination of the culture's commodities, fandoms, players and industries has been a subject of investigation from an array of scholars across several disciplines. As a result, game studies incorporates many perspectives informed by the variety of disciplinary research practices that have been undertaken. In this regard the field is far from monolithic and lacks a standardized set of methodologies. Due to it being a particularly young field of study, many scholars incorporate the legacy of other disciplines in their examinations of the medium. A literary scholar, for example, may embark on a close reading of a particular game as a piece of text; a film scholar may focus on the relationship between the player, the screen, and the cinematic aspects of the medium; and a computer scientist may look at the underlying technologies (code, hardware, and their interactions) that make digital games possible.

While these perspectives have provided foundational tools for the examination of digital games, many of these investigations suffer from insular perspectives and a lack of interdisciplinary engagement. Engaging in the study of a medium which itself incorporates many other media, and has spawned countless cultures, subcultures, and countercultures, requires an investigative effort which cuts across disciplinary boundaries in order to achieve a nuanced understanding of the medium. Digital gaming is a phenomenon which is at once technological, social, cultural, political, and economic.

It is in this regard that the literature, which has informed my research on the subject of abandonware, originates from a number of disciplines examining the phenomenon of digital games. As a unique phenomenon within digital gaming cultures, abandonware is

situated within a variety of socio-cultural, technological, and economic concerns. As a direct result of this intersectionality, this literature review incorporates disciplinary perspectives which speak to these specific aspects in relation to abandonware.

As abandonware is a term given to obsolete gaming technologies, an examination of the literature pertaining to the specific technological considerations of these devices provides a foundation in understanding how these technological considerations inform creative production on a particular device. The literature within the subfield of platform studies provides an examination of technological and cultural considerations which informs the means of creative production on digital devices. While the subfield has yet to gain a deeper traction within game studies, its methodology provides a framework for the study of digital technologies within the humanities which incorporates how technological considerations operate to influence the means by which creative undertakings are accomplished on specific devices. However, platform studies has yet to emerge beyond a single perspective pertaining to these considerations, often reading like comprehensive industrial histories of a technology's development rather than its larger cultural considerations and influences.

Fan studies offers a means of investigating the larger implications of gaming cultures centred on abandonware. Focused largely on fans of commercial media properties who produce their own cultural products derived from these franchises, the scholarly study of fans offers critical perspectives on their creative practices, social structures, and cultural economies. Fan studies also engages in the examination of the relationships between the cultural producers of mass media industries and the fans of their cultural commodities. Fans can never wholly separate themselves from the commodities they consume, and often bridge the divide between production and consumption of cultural commodities. As a means of discussing this relationship in specific regards to video game fans

communities, I have also incorporated a review of the study of video game modding fan subcultures, which often are perceived as contributing to the extension of the value of gaming properties beyond their original retail lifespan as a consumer commodity.

The final perspective that this literature review incorporates is that of the relationship to digital gaming hardware and software and their positions as consumer objects. As cultural commodities, digital platforms, even ones relegated to obsolescence, are subject to a number of signifiers of economic value, which are common in all commodities. This section reviews Marx's foundational theories of commodity and then expands upon this by examining literature that investigates the specific ways in which the commodities of gaming culture are licensed, marketed, and distributed, as well as how the perceived value of these commodities shift over time as older devices are removed from the retail market.

Reviewing the literature in these three areas of study provides a means of engaging in the study of abandoned platforms in a comprehensive manner. By investigating the legacy of the study of digital technologies as material objects, as social and cultural phenomenon and as commodity-objects, this literature review will provide the framework which acts as the foundation for the methodological approaches my examination of the Sega Dreamcast will employ.

1.2. Platform Studies

The subfield of platform studies directly addresses the technical aspects of video games and computation through discussing how a digital platform limits or enables computational creativity. In an approach that can best be described as a "bottom-up" practice, platform studies seeks to investigate how the technical considerations of a specific platform informs the creation of digital content, as those creating works for a

specific platform require a high level of expertise in this area in order to realize the creative work. Platform studies demands close attention not only to the technical considerations, but also to the means of production, interaction, and consumption that inform the cultural conditions of the platform.

The field emerged as a response to a larger call for a standard methodology in the study of digital games and their technologies. This work began with the 2002 paper “Computer Game Criticism: A Method for Computer Game Analysis,” in which Lars Konzack outlines a framework for a standardized analytical approach to video and computer games. This proposed method was to be accomplished through breaking down the examination into “seven different layers of the computer game: hardware, program code, functionality, gameplay, meaning, referentiality, and socio-culture” (Konzack 2002, 1). In order to avoid what Konzack contested was a methodological flaw due to the fragmented study of games, he proposes a standardized, if problematic, system for the description of games in advance of scholarly analysis, one that focuses on “virtual space and the playground” (ibid 2). Even with Konzack's call for a standardized methodology, this seven-layer approach led to a subdivision of individual elements of study, rather than an integrated method, still leaving the study of games and their technologies subject to a fractured method of analysis.

Published in the December issue of *Game Studies* in 2006, Nick Montfort's “Combat in Context” builds upon the work of Konzack as a means of further establishing a standardized method of analysis for digital games through a case study examining the Atari VCS game *Combat* (1977). The differences in methodology are explicit in Montfort's analysis; his introduction discusses not only the game itself, but also the system it was made for, its control schema as well as its retail market cost at the time of the system's release in 1977. This paper marks the first occasion where the term “platform

studies" is used as Montfort appropriates Konzack's seven layers and reworks them into a "five level" framework for analysis. Montfort's most significant contribution in this regard is the inclusion of the platform layer, the introduction of which acts as the foundation of the framework for the emergence of platform studies. The platform layer describes the specific technological conditions of a particular device; the unique combination of hardware, software, and firmware that lies at the centre of a digital platform.

Figure 1. The platform studies five level framework.

Reception/Operation
Interface
Form/Function
Code
Platform

Building upon the platform layer, Montfort outlines the four other layers that comprise this five level method of analysis: code, form/function, interface, and reception/operation. The code layer is used to examine the underlying computer code that comprises a piece of software running on a digital platform. Form and function offer a means of discussing the graphic elements of a piece of software and the tasks the software is meant to accomplish, whether it be a game, a word processing tool, an accounting tool, or anything piece of software. The interface layer discusses how a user interacts with a piece of software operating on a platform. Finally, the reception/operation layer is used to investigate the cultural considerations of a piece of software operating on a platform. By interfacing with a piece of software through a platform, the user generates her own meanings and pleasures in relationship to the whole.

Platform studies seeks not simply to study games and their reception; it operates as a holistic and unified approach to video game criticism, not only through the study of a game (the content of a specific platform), but also the cultural, social and technological conditions surrounding the creation of the platform and its content. What are the technological limitations of a platform that facilitate or limit creative practices for a platform? What are the social and cultural conditions in which the platform is situated? Platform studies operates to answer these questions, namely, to examine these technologies as objects situated in culture, providing an in-depth analysis into the inner workings of these devices as a means of determining the properties specific to each platform, and thereby providing a richer method of analysis of the content produced for a platform. While these texts provide rich technical information on the development of digital platforms, little has been done to address how these devices become situated in culture beyond their development.

The inaugural book in the MIT Press' "Platform Studies" series is an examination of the hardware and software operations of a video game platform from the early era of video game development. Released in 1977, the Atari VCS (Video Computer System) was one of the first commercially successful home video game consoles, and it is the object of study in Nick Montfort and Ian Bogost's *Racing the Beam: The Atari Video Computer System* (2009). The VCS was a device with a particular set of electronic components that made the system notoriously difficult to program for. It was through the limitations set out by the electronics within the console, the lack of computational memory on game cartridges, their interaction with input devices (joysticks, other game controllers.), as well as cathode ray televisions that dictated the aesthetics and scope of many of the games for the system.

In *Racing the Beam*, the authors offer a series of case studies, each in relation to a single game developed for the VCS. Due to the extreme limitations set out by the VCS platform, programmers had to understand the operations of all of the components of the VCS and how they interacted with the software and the television, which displayed the game. The variety of conditions of the platform dictated the terms of development to the programmers. In this regard, the authors' examination of the means and terms of the production of content in relation to the technological is central in understanding the overall progression of video games as a medium. Understanding the terms of production also becomes instructive in the analysis of game based media with regards to their relationships with players; each platform's capabilities determine the types of games played, how they are packaged and marketed, player responses, as well as the critical responses produced. In short, the platform exists as the core of an array of orbiting responses, transformations and definitions within video game culture.

Jimmy Maher's *The Future Was Here: The Commodore Amiga* (2012), investigates the ways in which the Commodore Amiga computer enabled new forms of digital creativity. Due to "the tightly coupled network of specialized custom chips that is the Amiga platform's defining hardware characteristic" (Maher, 2012, 257), users of the Amiga were able to access a new spectrum of software: digital graphics tools enabling the manipulation of photographs, video editing tools, animation tools and more. Maher's examination of the Amiga discusses in depth, the history of the development of both the hardware and software of the platform, while addressing the revolutionary nature of many of these developments for home computing platforms. The Amiga was a digital platform that was notable for its greater graphical and audio processing capabilities among its contemporaries, and the bulk of Maher's analysis focuses on how these technological feats were accomplished.

The Future Was Here discusses how these technological innovations on the Amiga enabled new forms of multi-media production in the home computer market. While Maher gives great attention to the technical detail of these production tools and posits the platform as "the world's first true multimedia PC" (ibid 5), the bulk of his examination rests on how Amiga users interacted with the platform in means prescribed by the device and its software, that is, with one primary exception. One of the notable creative communities which emerged as a result of the Amiga's technical capabilities was that of the DemoScene. Members of the DemoScene were among the most advanced of Amiga users, relying on their technical expertise to push the limits of the graphic and audio capabilities of the system by creating animated videos called 'Demos'. Born out of previous subcultures centred on the Commodore 64, the DemoScene's "roots lie in the 'cracking' and illegal trading of commercial software" (ibid 181). Originally, Demos were distributed as part of a practice of copying and pirating games, where game "crackers" would load their own Demos onto pirated game floppy discs, as a means of tagging the pirated copy; thereby, claiming ownership over the "crack".

While these Demos were the first instances of work in what would become the DemoScene, the subculture grew beyond cracking demos, and with the introduction of the Amiga, a larger DemoScene flourished. Maher's analysis of the DemoScene marks the first inclusion of platform oriented subcultures in platform studies, one which takes account of the differing approaches to creative computation that DemoSceners engaged in. These practices, centred on "ultra fast graphic routines, music composition, [and] a general maximizing of hardware capabilities," were undertaken "without regard for 'correct', university sanctioned approaches to programming" (ibid 201). These unsanctioned practices, however, often led gaming companies to recruit members of the DemoScene due to their greater level of expertise and understanding of the platform.

While Maher accounts for the subcultural roots of the scene, his examination also examines the relationship between software publishers and DemoSceners in this regard: "game publishers and the scene had a real, if often strained symbiotic relationship with one another" (ibid).

Despite offering a brief analysis of a platform based subculture, the final result of Maher's analysis still privileges the industrial conditions of production on the Amiga. In his final examination of the "scene in context", he notes the large number of DemoScene community members who moved beyond the scene to become game developers, not just for the Amiga, but for other platforms as well. By discussing these groups and their shift from unsanctioned to sanctioned creative practice, Maher's analysis marks the DemoScene as a marginalized subculture, legitimated only when members of the scene began to create sanctioned or licensed work within the software and games industries. The discussion of these unsanctioned creative practices within platform studies literature emerges, being framed as aberrant behaviour. Beyond *The Future Was Here*, these examinations of platform based appropriations are either mentioned in brief, or omitted from the analysis entirely.

The most recent offering to date in the "Platform Studies" series, Steven E. Jones and George K. Thiruvthukal's *Codename Revolution: The Nintendo Wii Platform* (2012), offers a study on the Nintendo Wii video game console, which is responsible in part for the phenomenon of "casual gaming," popularized by Jesper Juul in his book *The Casual Revolution: Reinventing Video Game and Their Players* (2010). Where Bogost and Montfort focused on the console itself and how that shaped the technological limitations and innovations of the Atari VCS, Jones and Thiruvthukal focus their analysis on Nintendo's powerful brand and marketing strata as well as the key device that popularized the Wii: the mimetic motion control interface named the Wii-mote.

The authors' study of the Wii-mote, being the central focus of attention, offers how aesthetic and marketing considerations worked in conjunction with the simpler graphics of the console compared to its contemporaries, such as the Playstation 3 or Xbox 360. Creating a “true one-to-one fidelity of motion [which] must be constrained within the limits of the game's cartoon world in order for the whole experience to be rendered entertaining” (Jones and Thiruvathukal, 2012, 35); the Wii-mote’s ability to transform living rooms into social player spaces, connected directly with Nintendo's visual aesthetics. This enabled an experience whereby the Wii-mote “becomes not just a controller but also a material object conjoined to the avatar, and as you manipulate one, you manipulate the other” (ibid, 67). This one-to-one control link between a player and his/her onscreen avatar is perhaps the greatest level of innovation for the platform.

Jones and Thiruvthukal consider the analysis of the Wii beyond its consumer interactions by discussing the rise of hacking culture around the Wii Console and the Wii-mote. In a discussion of the "Twilight Hack", the authors describe how player/hackers learned they could use and exploit the game *The Legend of Zelda: Twilight Princess (2006)*, in order to load "homebrew" (independently developed) software onto the Wii. This practice of the player/ hacker further expands the analysis of the platform as a creative computational device, by focusing on both post-consumer tinkerers, who exist outside of the industrial development model of the video game industry and their relationships to digital platforms. Indeed, platform studies of the hacking practices of participatory cultures and online communities could be produced by following the five level model, providing an analysis of creative, social, and hacking practices that are connected to a specific platform.

In addition to the three books that have been published in the "Platform Studies" series, a number of papers have also been published that can be associated with it. Mia

Consalvo and Nick Montfort's "Dreamcast, Console of the Avant-Garde" (2012) attempts to investigate the ways in which "a platform can facilitate new types of video game development and can expand the concept of video gaming" (Consalvo & Monfort, 2012, 82). Using five games from the Dreamcast catalogue, the authors endeavour to frame the platform, as one which facilitated "a type of development practice that did not occur on contemporary platforms (the Xbox and the Playstation 2), or in other commercial development contexts before or since" (ibid). They equate these games with the practice of creating avant-garde artworks, noting that they were produced in an industrial model of cultural production rather than an independent model.

This distinction is crucial in understanding how the authors frame the nature of these so-called avant-garde works on the Dreamcast. Rather than discussing the ideological considerations of the avant-garde, they posit the avant-garde as solely an aesthetic practice, noting their examination of "the Dreamcast as an avant-garde console as compared to systems on the market at the same time and the Sega systems that preceded it" (ibid, 85). While their discussion of avant-garde practice is not wholly satisfactory, they move on to claim that the Dreamcast enabled a type of video game development that was "more" avant-garde than other platforms.

Through an examination of game reviews, and an interview with a Sega executive, Consalvo and Montfort examine the means of production at Sega and how that development environment facilitated the creation of five notable games that feel outside of traditional game genres: *Jet Grind Radio*, *Seaman*, *Segagaga*, *Space Channel 5*, and *Rez*. Choosing to focus on the platform, however, limits their examination of the avant-garde. The authors state:

Without engaging these particular discussions any further, we mean to show that videogame production on the Dreamcast, as represented through five particular titles, corresponded in significant ways to aesthetic activity in avant-garde movements and cultural production" (ibid)

While video games can be experimental and possess the potential to become aligned with avant-garde practices, the authors do not provide a stable enough foundation upon which to discuss these games as avant-garde. In addition, their claims that the platform itself facilitated the production of these games does not account for the corporate development structure at Sega sufficiently enough to explain why it is the platform rather than the corporate environment that facilitated these works. The Dreamcast's commercial life was short, causing Sega to discontinue the console less than two years after its release, which may have promoted the company to take larger risks in developing unconventional games. The commercial success or failure of a platform must be accounted for in this type of discussion.

The cultural value of a platform as it has been discussed in the bulk of the literature to date, appears to be tied wholly to its life as a commercial commodity. All these investigations into a platform's ability to enable or constrain creative production, rely wholly on examinations of sanctioned works created by the corporations that produced them or by their licensees. While *Codename Revolution* and *The Future was Here* briefly discuss hacking and modification practice, they frame these as marginalized practices. Due to omitting discussions of hacking, modding and appropriation, the underlying thesis of the discipline appears to be that the value of a platform is fixed in time in relation to its retail shelf life. The potential for the discipline to investigate how platforms are situated in culture beyond the life as a retail commodity is present; however, very few scholars have undertaken this endeavour. There is one work within the literature that does

investigate the platforms cultural value with a specific subculture dedicated to abandoned gaming consoles: "Power Users and Retro Puppets" (2010), the Master's thesis of Anders Carlsson.

Carlsson's thesis examines a subculture surrounding the production of low-fi 8 bit electronic music called chipmusic. The origins of chipmusic culture date back to the 1980s, which saw the production of new devices such as the Commodore 64, the Nintendo Entertainment System and the Nintendo Gameboy. The introduction of these new home computers and gaming consoles were notable due to the particular qualities of the sounds that the platforms were capable of producing. These unique low-fi sounds, produced by the unique audio chip sets contained within each platform, became the hallmark aesthetics of chipmusic's sonic landscape. Using an array of homebrew musical composition software designed for these platforms, chip musicians pushed the technical limitations of the platform's sound capabilities. Carlsson notes: "It is commonly stipulated that chipmusic is made despite of the hardware and not because of it. There is a focus on the limitations rather than the potentials" (Carlsson, 2010, 14). Chip musicians work within the constraints determined by the platform's unique audio capabilities, finding new ways to exploit these constraints to create rich forms of electronic music beyond any that had been composed on the platform at the height of its commercial popularity.

Carlsson's exploration of these platform based appropriations discusses the material conditions of chip music culture by employing the platform studies methodology as a means of discussing the "physical platforms and software interfaces, but also the cultural conditions" (ibid, 13) of the platform. However, unlike other examinations of digital platforms, Carlsson does not focus his analysis on these devices at the height of the commercial successes, but rather on the devices as appropriated once they have been

relegated to the realm of abandonware. As creators have picked up these old technologies to create new works, Carlsson discusses how chipmusic elicits an "unsentimental nostalgia" (ibid, 19) for the sounds these platforms created during their commercial lifespan. Thus, while these abandoned platforms are used in new ways, the works produced on them are still inextricably linked to the platform's past position as a commercial device.

While these works have created a "retro" condition which speaks to the era in which the platforms were manufactured and distributed, these "low-tech tools and blurry memories of the past are mixed together with a new idea of the future; a 'nostalgia for the future'" (ibid). Chip musicians, like others who appropriate abandoned technologies in their practice rediscover "the lost potentials of rusty machines and sounds from the past" (ibid), and contribute to the construction of new cultural values associated with these platforms. Carlsson's investigation of the materiality of chipmusic within his thesis offers a glimpse at the potential of platform studies, not simply as an examination of the technical and cultural conditions that constitute a platform during its life as a commercial commodity, but also as a means of investigating how digital creators appropriate these conditions to create new work. As a result of these creative practices, the cultural conditions of the platform shift. For example, a Nintendo Gameboy, once known as a device designed to play games on, has now become a digital musical instrument.

While platform studies is still an emergent subfield of videogame studies, its investigations of the technical and cultural conditions which enable and constrain digital creativity is invaluable in understanding the relationship between creators and the platforms which they utilize. The underlying trend of focusing on digital platforms solely as objects tied to their position as commercial commodities is problematic in understanding the true spectrum of cultural conditions that exist in relation to a platform.

However, analyses such as those undertaken by Carlsson, illustrate the potential for the field to examine the full range of creative practices in relationship to digital platforms. In this regard, platform studies' methodology can speak to all manner of creative practice related to digital platforms, becoming a more inclusive subfield of study which can examine both sanctioned and unsanctioned creative endeavours. Thus, while accounting for the platform's life as a commercial commodity, future scholarship could account for a variety of fan practices, contemporary art practices, as well as hacking and modification practices. All of these speak to the means by which digital platforms enable and constrain creativity, depending on the cultural context in which these works are created.

1.3 Fan Studies and Modding Culture

The study of fans generally describes members of fan communities as participants in culture. Not simply consuming the cultural commodities of media industries, fans are often framed as active audience members, contributing shared meanings over a particular media program, intellectual property, or popular franchise produced by mass media outlets. Fans within fandoms produce meaning through a variety of methods, whether through communication with other members of their communities, or through the creation of new works based on these properties. The scholarship regarding fans and fandoms often discusses the relationships between fans, the commodities that are the objects of fandom, as well as their relationship to the larger culture industries which produce these commodities.

John Fiske's work focuses on fans through discussing their relationships to the popular media which spawns them. In "The Popular Economy," Fiske examines the differing interests between the producers of popular media and their audiences. These often conflicting interests articulate themselves through what Fiske delineates as "simultaneous

economies; which we may call the financial and the cultural" (Fiske 2008, 565). While producers of cultural commodities engage in a form of production that situates itself within both of these economies, the general focus of these works is to produce revenue for the producers. Fiske notes that "meanings do not circulate in the cultural economy in the same way that wealth does in the financial" (ibid, 567). The conditions under which cultural commodities produce meaning are not solely tied to the producers of the commodity. That is to say, these commodities "are not containers or conveyors of meaning and pleasure, but rather provokers of meaning and pleasure" (ibid, 568). For Fiske, the cultural commodity is the beginning of the meaning making process rather than the end. In this regard, it is the fans of these commodities who inscribe their own meanings and pleasures upon the object of their fandom.

Fiske discusses how fans gain semiotic power over cultural commodities through their ability to "construct meanings, pleasure and social identities" (ibid, 579) within their communities. The primary means of constructing these meanings, pleasures, and identities is through the assembly of fan knowledge surrounding a cultural commodity. Through sharing "fan knowledge and appreciation," fans are able to "acquire an unofficial cultural capital that is a major source of self-esteem among the peer group" (Fiske, 1992, 33). For Fiske, fandom "offers ways of filling cultural lack and provides the social prestige and self-esteem that go with cultural capital" (ibid). In "The Cultural Economy of Fandom," Fiske investigates the ways in which fans gain cultural capital both collectively, and individually as members of a fan community. This cultural capital is gained primarily in three ways: through the construction of fan knowledge within a community, where those with a greater knowledge base gain cultural capital; through cultural labour practices such as writing and appropriation to create new texts based on a

cultural commodity; and through the collection of material objects and licensed merchandise based on a popular franchise.

Fan cultures are born out of "the commercial commodities (texts, stars, performances) of the cultural industries" (ibid 46). As a result, they inhabit the identities of both consumer and producer. Through consuming cultural commodities, fans support the properties that are the objects of their fandom, often determining the success or failure of popular franchises. Fans also become producers, when they engage in participatory practices such as the creation of new derivative works which appropriate the worlds, characters, and iconography of a franchise, as well as through the accumulation and archiving of knowledge through the creation of wikis, web pages, and material collections. In this regard, fans ascribe new meanings on cultural commodities, becoming active participants in the creation of cultural value and capital.

Henry Jenkins' scholarship with regard to fan cultures spans decades of work, with numerous case studies of a variety of fan driven creative practices. His work examining the practices of *Star Trek* fan fiction writers offers a glimpse at the moral economies of fan appropriation of a mainstream media franchise. *In Fans, Bloggers and Gamers: Exploring Participatory Culture* (2006), Jenkins notes the mainstream media's marginalization of fans, motivated by the perspective that fan production "challenges the very notion of literature as a kind of private property to be controlled by textual producers" (Jenkins, 2006, 40). By engaging in the stereotyping of fans as "infantile" (ibid), media outlets gain control over their intellectual properties by decreeing fan production as a form of aberrant consumer behaviour, and thus regain control of their authority over a franchise.

However, as Fiske discusses, Jenkins also notes that fan cultures are integral in the meaning making system of mass media products consumed in culture. One of the

methods of meaning making in fandoms emerges through a practice of "poaching" of the texts of popular culture. However, these fans communities believe themselves to be "respecting literary property even as they seek to appropriate it for their own use" (ibid, 41). As part of the moral economy of fandom, which is "an informal set of consensual norms" (ibid), fans see themselves not as thieves, but as contributors. These acts of appropriation situate products of popular culture as "not simply something that can be reread; it is something that can and must be rewritten to make it more responsive to their needs, to make it a better producer of meanings and pleasures" (ibid 40).

Historically, fans create shared meaning by distributing their appropriated works within their communities. In this regard fans identify themselves "not by being a regular viewer of a particular program, but by translating that viewing into some kind of cultural activity" (ibid, 41). These activities include sharing thoughts and feelings with others fans in a "subterranean network of readers and writers who remake programs in their own image" (ibid 40), as well as engaging in the production and distribution of their own cultural products. Together, these communities "claim those works as their own, remaking them in their own image" (ibid 59).

With his work on *Star Trek* fandoms and their textual appropriation through pre-digital communities, Jenkins shifts his attention in *Convergence Culture: Where Old and New Media Collide* (2006) to explore the nature of fan practices in the era of digital technology. While fan practices have flourished for decades under the radar of most media production institutions, Jenkins notes that "the Web has pushed that hidden layer of cultural activity into the foreground" (Jenkins, 2006, 137). The web enabled fan producers to share their work en masse, unbound by geography. Enabled by information networks capable of reducing the constraints of time and place, fan communities grew

into larger participatory frameworks, distributing their own objects of cultural production through websites, forums, and wikis.

The rise of digital technologies not only enabled communication between fan cultures, but it also enabled new strata of fan based media production. These new methods of production (digital film making, video and audio editing, PC game modding, etc.) created new means of interaction with digital technologies, allowing "everyday people to take advantage of new technologies that enabled them to archive, annotate, appropriate and recirculate media" (ibid, 140). Jenkins notes the primary differences between interaction and participation: "the constraints of interactivity are technological" and the constraints on participation are "shaped by the cultural and the social" (ibid, 137). This distinction is crucial in understanding the relationship between content creators and publishers to their fans.

Historically, fan media production has poached the worlds, characters, iconography and technologies from mainstream media products, and through these acts of appropriation, has claimed ownership over these new derivative works. These new forms of fan production and distribution were viewed by some as "a visible, public threat to the absolute control the culture industries asserted over their intellectual property" (ibid, 141). Where some corporations have attempted to use litigation to constrain and marginalize fan production, others have embraced fan cultures and their work, regarding them as "potentially revitalizing stagnant franchises and providing a low-cost means of generating new media content" (ibid, 143). The most notable example of the culture industry embracing fan production outlined by Jenkins is the fan modding practices of PC gamer culture.

Requiring a deeper technical knowledge than other fan cultures, PC modding culture began with gamers and fans delving into the underlying file structures of games to

modify in game assets to change the game's rules, aesthetics, and spaces. As the practice flourished, "many game companies [released] their design tools along side their game engines" (ibid, 166). In this regard, "the technology would put low-cost, easy to use tools for creative expression into the hands of average people" (ibid, 156). By handing creative tools over to fans, companies that embraced this strategy have managed to convince "their consumers to generate a significant amount of free labour by treating game design as an extension of the game experience" (ibid, 169).

While Jenkins touches on these concepts briefly, game scholars such as Olli Sotamaa have produced works which focus solely on PC modding cultures, their practices, and relationships to the video game industry. Much like Fiske's discussion of the shared meaning making process that fan cultures contribute to mass media, Sotamaa examines "the productive potentials of player populations" which, "are still central in understanding the nature of contemporary games" (Sotamaa, 2010, 240). His article, "When the Game Is Not Enough: Motivations and Practices among Computer Game Modding Culture," offers an investigation of the underlying motivations and ideologies which drive game modding communities.

Drawing from Abercrombie and Longhurst's (1998) taxonomies of fan cultures, Sotamaa outlines three primary motivations for PC modding practices: as an artistic endeavour, as a means by which players identify with and glean more enjoyment from a game, and as a means of acquiring a job in the game industry (ibid, 244). It is crucial to note that within the PC modding practices outlined in Sotamaa's case study, these activities are by and large sanctioned by the companies that publish the games that are being modified. Often, the practices of these fans are enabled by the software that they have purchased, as the editing and modification tools used by fans are created by the

companies that produce PC games, are included with the purchase of a particular game title.

However, fan practices also "appropriate content in ways that industries do not condone" (Postigo, 2008, 60). Engaged in practices akin to Jenkins' concept of poaching, Henry Postigo outlines how fans appropriate cultural content from one popular franchise and include elements of these franchises in their game modifications. Using several case studies as examples, Postigo discusses the relationship between fans, their unsanctioned practices, and the producers of the popular franchises; most notably in a case study of Hasbro's *GI Joe* franchise and the modding community of the game *Battlefield 1942*. A group of modders within the community had created a mod for *Battlefield* which took the vehicles, weapons, and characters from the popular cartoon and toy line, as the game's main assets. Taking the IP of their favourite franchises and importing its icons into game mods is a common practice of appropriation within PC game modding communities. This practice, however, can be met with reticence from certain entertainment corporations; in this case, Hasbro Inc.

Postigo's case study discusses how in spite of Hasbro's attempt to litigate the mod out of existence, the fans persisted. This "sense of having a 'right' over the game content, based on their relationship with the game" (ibid, 66) demonstrates how fans hold "a different set of values than those espoused by copyright" (ibid). Postigo outlines a crucial distinction between the often fluid moral economies of fandoms versus the strict legal structures of copyright regimes. Fuelled by motivations outside of economic concerns, modders and fans distribute their work freely to other members of their communities. As a result, modding culture "appropriates commercial content, [and] clashes against the 'commodity culture' of the culture industries that seek to control the form and flow of

cultural goods" (ibid, 71). In this regard, modding cultures are claiming partial ownership over these new hybrid works.

Postigo further discusses this concept of ownership through the dissemination of knowledge within modding communities. One of the ways in which modders claim ownership of a particular game or mod is through "mastery over media through knowledge of its content, be it textual or technological" (ibid). By mastering their abilities to modify PC games, and by sharing that knowledge with one another, modding communities gain essential knowledge into the underlying structures of these games, and with that, claim authorship over their own work within these structures. However, these fans are still working within the constraints of a system already constructed by the developers of PC games. While fans may poach the imagery and iconography from popular franchises within mass media and import them into their game mods, the process of modding remains to be a largely sanctioned practice within PC gaming.

The analyses of these practices, however, have been largely focused on those who modify games with software tools made readily available to PC modders. The work of those who modify, hack, and alter the software and hardware of gaming consoles is a largely overlooked practice within the literature. An exception is Paul Cantanese's "Where Have All the Console Artists Gone?," which examines the emerging culture surrounding those that modify video game consoles and their software as an artistic practice. Where PC modders still work within a system that enables modification, these practitioners are breaking open the "objects of worship" within gaming culture to create "console based subversions" (Cantanese, 2003, 350).

Cantanese's investigation of these works turns its attention to those who modify games for gaming consoles "without the consent of game developers or otherwise hacking commercial code" (ibid, 352). In these instances, modders have to reverse engineer a

game's code in order to manipulate it, which is a practice far removed from the sanctioned work of PC game modders. While Cantanese frames these works along a spectrum of art practice, these practices share many commonalities with practices of fans. Most notably, these creators are poaching works from other creative franchises in order to make it their own. This concept of shared authorship over a work through practices of appropriation is common throughout all of gaming culture's modding communities, including those who turn their attention to modifying and manipulating the hardware of gaming consoles.

The works of those who subvert gaming consoles, by bending and breaking their hardware, are a much rarer occurrence than other instances of game modification. This is due in large part to the sophisticated knowledge required to accomplish these types of work. Therefore, "the job of subverting the console hardware is made exponentially easier to those with basic programming and electronics knowledge" (ibid, 357). Those new to these practices, are able to rely on several communities in order to gain the technical knowledge necessary to modify gaming consoles. Cantanese cites homebrew game development communities (those who make unlicensed games for gaming consoles) and game piracy communities as two locations where this knowledge is freely distributed.

The knowledge produced by homebrew and piracy communities serve to demystify the technology; they enable others to overcome the challenges of subverting the hardware and exploiting its capabilities. Cantanese claims that gaming hardware is often fetishized, and demands a prescribed form of interaction, whereas creative practices centred on altering the functions of console hardware leave practitioners free to explore beyond these prescribed methods because "there are no specified boundaries" (ibid, 356). Through charting the trajectory of creative works made by fans, modders, and other creative practitioners in gaming cultures, Cantanese discusses the collective meaning

making processes that lie at the heart of fan cultures. Not tied to a singular sets of meanings distributed by cultural producers in the gaming industry, these artists manipulate games and their technologies to create new works which act to subvert the meanings attributed to games and their hardware as cultural commodity. Cantanese speaks to these practices and their implications: "to subvert them for uses other than the preordained is to question the very foundations on which video game culture is built" (ibid). Within the cultural economy of game fandoms, fans modders, and hackers rework and redefine the inscribed meanings of the software and hardware and gain ownership over it through the appropriation of the technologies and the creation of new game based works.

1.4 Game Technologies and Commodity

The means by which digital technologies are explored in both platform studies and fan studies discuss technologies and fans without discussing the fundamental conditions of what makes these objects and programs commodities in the larger consumer marketplace. While abandoned gaming hardware and software may not exist as a commodity on the retail market, these objects remain in an inseparable relationship to commodity culture. To understand a digital platform is to understand a piece of technology created with the expressed purpose of being a commodity-object. However, once this commodity has been abandoned in the retail market, new meanings and values are ascribed to these devices and their software.

In *Capital: Volume One* (1977), Karl Marx provides a framework for investigating commodities that has become the foundation upon which many investigations of digital gaming commodities are built. According to Marx, "the commodity is first of all, an external object, a thing which through its qualities satisfies human needs of whatever kind" (Marx, 1977, 126). Marx delineates the process by which objects become

commodities: "in order to become a commodity, the product must be transferred to the other person" (ibid, 131). However, in order for an object to be exchanged between a producer and a consumer, the value of the object must be determined. Marx outlines two fundamental ways in which commodities are assigned value: the use value and the exchange value.

The use value of an object is determined by the "usefulness of a thing" (ibid, 126), that is, the object's ability to satisfy the needs that it was designed to do. A hammer's use value is determined by its durability and ability to drive nails, a telephone's use value is determined by its ability to enable vocal communication over distances. The use value of an object is by and large fixed to the object's intended usefulness, which is to say that when an object can no longer adequately perform the tasks it was designed for, its use value diminishes. An object's exchange value is always tied to its relationship to other commodities. The determining of an object's exchange value is through examining how the "use values of one kind exchange for the use values of another kind" (ibid). However, the relationship between the usefulness of two commodities is largely determined by the parties making the exchange, as a result: "this relation changes constantly in time and place" (ibid). Due to this shifting relationship in the perceived value of objects to be exchanged based on their prescribed usefulness, Marx notes that "the exchange relation of commodities is characterized precisely by its abstraction from its use value" (ibid, 127). These shifting relations in the exchange values of commodities can be characterized as a "social relation between objects, a relation which exists apart from and outside the producers" (ibid, 165) of these objects. Marx's introduction of the social conditions of commodities is used to introduce the concept of commodity fetishism, a phenomenon which creates a framework in which objects are deemed to have greater exchange value due to their relationship with socio-cultural considerations.

When discussing commodity fetishism, it is the social dimensions of a culture which determine the means by which an object becomes a highly sought after commodity. These fetishized commodities' values are largely separate from their use values, and are related to the social and cultural values inscribed upon an object as a symbol of status, whether that be cultural, social, or economic. While Marx's discussion of commodity fetishism separates the commodity from the producers of the objects, contemporary discussions of this phenomenon tie the commodity back to the producers through discussions of marketing practices and social conditions which serve to reinforce the fetishization of a commodity.

In *Digital Play: The Interaction of Technology, Culture and Marketing* (2003), Stephen Kline, Nick Dyer-Witherford and Greg De Peuter investigate the relationship between digital commodities, gaming technologies, and marketing and licensing practices. The authors offer an examination of the digital gaming industry, outlining its origins from hackers embedded within military research in the 1960s, to contemporary gaming manufacturers and their business practices. Contemporary gaming companies have enacted strict licensing protocols as well as enormous marketing campaigns in order to achieve control over the perceived value of the gaming commodities they are producing. The authors focus their attention on these efforts from several gaming companies, including Nintendo, whose "control of the video game industry depended on careful management not only of production but also of consumption" (Kline et al. 118). In what would become known as the console wars of the late 1980s into the early 1990s, rival corporations Sega and Nintendo used a variety of strategies in an attempt to ensure that their respective gaming consoles were the most successful in the retail market.

Nintendo employed an aggressive marketing campaign which included "in-store 'World of Nintendo' merchandising displays; sponsored video game competitions;

established co-sponsorships and cross-licensing arrangements with Pepsi, Tide and McDonald's; and set up a network of over 250 fan clubs" (ibid, 119). Tied to this marketing campaign, Nintendo had established a series of "draconian licensing agreements", which "gave it a grip over the software supply" (ibid, 129). In addition, the company also began producing *Nintendo Power Magazine*, which was produced in house and dedicated to publishing content only about games and products licensed by Nintendo. Not only did this allow the company to maintain a large foothold over the commercial games industry, it also contributed to Nintendo's own machinations of creating a fetishistic consumer desire centred around its products. Children who grew up in this era are often touted as the "Nintendo Generation," in spite of the market presence of Sega, its primary rival at the time.

Sega's primary strategy to compete with Nintendo emerged in force with the introduction of the Sega Genesis console. Employing what the authors term a "'revolution strategy' of technological innovation" (ibid), Sega used the allure of superior technology to market the device. With the Nintendo Entertainment System (NES) already four years old at the date of introduction of the Genesis, Sega employed a rhetoric of technological progress to market its new console. Given that the device held double the processing power of the NES, Sega's marketing campaigns centred on the platform's potential for more sophisticated graphics, and gameplay experiences than its rival. The authors' examination of the "Console Wars" offers a case study detailing the foundation for common marketing, licensing, and business practices which still persist in the contemporary gaming industry. Gaming console manufacturers have perpetuated this narrative of progress, through the continual introduction of new revolutionary commodities and the creation of new generations of gaming consoles. The marketing strategies involved in this process leave consumers constantly looking forward,

anticipating the new, while consuming soon to be obsolete technologies. Fetishized in the moment as the latest object of gaming's progress, the devices soon become superseded by newer devices, which then perpetuate this so-called cycle of innovation. New devices replace the old, which then become canonized as moments of great innovation along gaming history's timeline.

With most discussions of gaming hardware and software examining these commercial commodities during their lifespan in the retail market, James Newman's *Best Before: Videogames, Supersession and Obsolescence* (2013) offers an examination of digital games beyond their prime retail shelf lives. Newman's work frames digital games within the market driven forces that see the successive introduction of new gaming platforms and software titles, noting that "the speed with which new platforms and delivery mechanisms can establish themselves and proliferate is little short of astonishing" (Newman, 2013, 1). With the constant introduction of new devices and titles to gaming's already vast library, Newman discusses the means by which these new commodities are introduced to market, as well as how older gaming commodities become "outdated, superseded and unsupported by their publishers and developers" (ibid, 3). The concept of a continual forced obsolescence in the gaming industry is a primary factor in older games becoming relegated to the position of abandonware. Newman's examination of this phenomenon within the gaming industry adds a crucial and much needed perspective to the examination of digital platforms and their software as commodities, explaining how their perceived value shifts over time.

Newman discusses the history of gaming technologies as "not just a movement through time, not just progression, but rather a sense of 'progress' towards better, faster technology, if not better games" (ibid, 42). Looking back, the narrative of the medium's history is continually tied to new developments in the gaming industry. This type of

narrative, underscores the commercial and technological successes of new hardware and software, and it projects this narrative forward to catalyse an emerging preoccupation with the next "revolution" in gaming. This continual focus on the "new" in gaming does not account for the "old," unless framing them as past developments in the larger history of the medium. Old games, according to Newman's analysis, are subject to a continual threat of supersession by a continual introduction of new games and technologies to the consumer market.

However, Newman notes that "even in the light of their apparently self evident obsolescence and replacement in the marketplace by technologically superior successors [...] old games and old systems linger on" (ibid, 84). In spite of a marketing culture which drives the novelty of new games and hardware in the gaming industry, old consoles and games do not wholly lose their value, but, rather, experience a shift in their perceived value. Citing an article titled "Onward through the Fog: Computer Game Collection and the Play of Obsolescence" (Thompson, et al. 2009), Newman charts the progression of games in their commercial "transformation into vintage, rather than second hand" (ibid, 92), touching upon the phenomenon of retro gaming collector cultures. This movement into a new category of value reinvigorates the often diminishing exchange values of second hand games, through a "function of their scarcity, which often arises from initially limited releases or short production runs, or by the virtue of their valorization in 'best game' lists published in specialized magazines or websites" (ibid). Once abandoned and relegated to the retro or vintage category, gaming hardware and software becomes relegated to the tertiary markets of fan collector cultures. Though Newman discusses these cultures in brief, these publications emerge as primary sites for the valorization and discussion of vintage gaming commodities, making them the driving forces behind the perceived values of vintage games.

Retro gaming magazines and websites emerged as a means of discussing the larger commercial history of the medium, determining the value of discontinued hardware and games by placing them within a historical canon. The British publishing company IP Publishing is largely responsible for contributing to this canonization of abandoned gaming technologies through several of their print publications. The magazine *Retro Gamer* is a publication focused on abandoned gaming consoles and their games. The magazine's website offers the following description of its agenda:

"Celebrating videogames' exciting past with style and purpose, it is both an intelligent and emotional rediscovery of the IPs that defined an industry. Famed for its informative and in-depth stories, access to legendary developers and its sheer enthusiasm for the games it covers, the award-winning Retro Gamer is a worldwide phenomenon universally loved by an entire industry"

(Retrogamer.net/about)

A sampling from an issue of the magazine discusses the "revolutionary" nature of games and hardware from the culture's past, through articles about gaming platforms, notable games and vanguard game developers. In addition IP Publishing releases supplementary publications to the magazines several times a year: square bound magazines called "bookazines." Publications such as the *Video Game Hardware Handbook*, *The Atari Book*, *The Commodore 64 Book* and *Retro* all examine gaming platforms and their software titles from a retro-collector perspective.

While these bookazines do not fall under the category of scholarly investigations of old games and technology, they offer a crucial perspective into video game fan collectors' culture. For example, *The Video Game Hardware Handbook* series is a "collection of extensive features on some of the greatest game machines ever created [...] as the

essential companion piece to any budding retro collection" (Day, 2009, 1). Each feature contains a lengthy history of the development of a particular platform, its technical specifications, and notable games developed for the console, including a "best 10" and "top 50" section. These standardized methods of examining old platforms, at first glance, do not differ from the scholarly examinations in platform studies; they remain situated within the commercial development histories of gaming platforms, and they serve to canonize software developed for each platform. Moreover, these entries also frame the platforms economically by listing their original retail value, as well as the cost of buying one in the collectors' marketplace. While the *Retro Gamer* series and its "bookazines" tie gaming platforms to their commercial successes, much like the field of platform studies, they also expand their examination beyond, sometimes even exploring the nature of homebrew software cultures centred around a specific platform.

An article discussing the Pokemon Mini platform in the *Videogame Hardware Handbook: Vol.2*, describes how the short lived platform developed a community of "Pokemon Mini enthusiasts" who "reverse engineered the handheld, developed an emulator of their own and began to produce their own tech demos and homebrew games" (Day, 2011, 13). While the article discusses the commercial elements of the platform, including costs and games released for the device, its focus lies on homebrew development. Due to the extremely limited commercial life of the Pokemon Mini platform, the article focuses on the technological and cultural conditions inscribed upon the device by the non-sanctioned developers. This post-commodity examination is commonplace in these publications, with each issue of *Retro Gamer* also housing a homebrew section, discussing development projects still being undertaken for abandoned gaming devices.

These “retro-gaming” publications are critical in understanding the cultures surrounding abandoned gaming technologies. They outline very clearly the seemingly dichotomous nature of abandonware, through discussing collector's culture as well as homebrew development communities. These devices become objects of a post-commodity fetishism, sought after by collectors based on scarcity and their relationship to the canon of gaming history. Yet they also become new tools for creative production, in the hands of a small set of enthusiasts who possess the expertise to reverse engineer and create new works for these platforms. While part of the popular press surrounding video games, these publications serve to illustrate how the perceived cultural and economic values of abandoned gaming technologies shift over time. Seemingly binary in their relationships, these positions exist as end points on a spectrum of cultural values related to abandonware; often the producers of game hacks and homebrew software also situate themselves as consumers of these platforms and their commercial software. Neither of these perspectives could exist without the other, and the incorporation of both of these perspectives is fundamental in understanding the shifting cultural definitions that constitute a digital platform's position in culture.

1.5 Conclusion

Scholars undertaking the investigation of digital platforms often expend great effort to uncover the histories of the technological developments of platforms. When discussing how these platforms determine interactions with consumers, these studies are useful in understanding how these interactions are constructed at the industrial level of production. However, addressing the larger cultural and social considerations that determine how consumers participate in cultures centred on particular platforms requires the investigation of the cultures themselves and their relationships to these objects.

The integration of fan studies into the examination of a digital platform provides a deeper insight into how the users of these platforms consume content and engage in dialogue with the platform. Occupying positions as both consumers and creators for digital platforms, the examination of these cultures and their practices becomes crucial in understanding the various cultural values ascribed to a digital device.

Finally, examining the marketing and licensing strategies of the parent companies of these platforms offers insight into the economic and culture values that are projected onto digital platforms. While the scholarship examined in this literature review provides a foundation for these types of investigations, the bulk of scholarship in the field of game studies omits the examination and citation of popular texts within gaming culture, such as books examining the medium's history, such as, Steve Poole's *Trigger Happy* (2000) and Steven Kent's *The Ultimate History of Video Games* (2001), as well as magazine publications. The field of inquiry being a relatively young discipline, game scholars would benefit greatly from recognition of the knowledge generated by such texts as valuable research materials. The historical information gathered and archived by gaming culture is an invaluable resource that spans the entire history of the medium. By examining these works in relation to other scholarship, game studies scholars could then produce valuable critical investigations while respecting the rich knowledge generated by gaming culture outside of the academy.

The primary motivation behind this literature review and its subsequent influence on my methodology is born of what I believe to be a larger need for interdisciplinary investigations into digital platforms, as well as their games and gaming culture writ large. The medium stems from an industrial model of production, which has spawned a myriad of fan cultures and subcultures, as well as a bedroom industry of marketing and media production surrounding it. The study of games, its technologies and its cultures must be

accounted for due to the vast number of differing and conflicting perspectives it contains. When scholars encounter these works using multifaceted investigative lenses, a more nuanced understanding of gaming industries, and their orbiting cultures and subcultures, is achievable.

CHAPTER 2

Methodological Approaches to the Study of Abandonware

My investigation will chart the intersections between the digital platform, the political economy of digital cultures and devices, as well as abandonware based appropriations created by homebrew developers and fan based hacking cultures. This method of triangulation situates the Dreamcast platform at the heart of the economic, social and cultural practices of the gaming industry and the fan cultures that produce derivative works for its technologies. I will thus be able to discuss the platform as a device which has enabled new forms of digital remix cultures, shifting the platform away from previous definitions located within consumer gaming practices, and moving it towards new definitions as a tool for the creation and exhibition of post-consumer creative works.

During the course of this research, my primary questions have focused on the nature of fandoms, their relationships to digital platforms, and their social and cultural practices online. How does these practitioners alter their relationships to digital platforms? How do they accomplish the work of hacking and modify these systems? How is knowledge of production disseminated online? Perhaps the most pressing question in this investigation relates to digital platforms in their state of abandonware: how do creative practitioners use abandoned gaming console in the production of new creative works? What are the implications of these post-consumer practices?

In order to address these research questions, I will begin with a brief examination of the Dreamcast in its state as a consumer commodity, in order to glean a basic understanding of the initial technological and cultural considerations of the Dreamcast in the retail market. However, the problematic nature of platform studies' sole focus on creation privileges the industrial model of creative computational production. As a new

field of enquiry, platform studies has also been under scrutiny for its over-emphasis on the technological aspects of digital platforms.

While it is these technological considerations that shape the means of production for a platform, the field has yet to emerge from a perspective that is a form of both a consumer, and developer hardware fetishism. Furthermore, examining works created for these platforms in either early stages of platform development or at the platform's height of popularity, there is little to no accounting of how platforms become situated in fan cultures when they move into states of abandonware. While platform studies' five level approach of analysis (Montfort, 2006) can account for this shift in states from retail commodity to a post-consumer state, it has yet to be applied in this manner. It is here in this post-consumer state that artists, modders, fans, and hackers produce new works for devices abandoned by the corporations that manufactured them. As a result of this discussion, I will examine how practices of piracy, hacking, and reverse engineering have contributed to the rise of creative practices on abandonware.

By using platform studies' five level method of analysis, I will examine the technological considerations of the Sega Dreamcast that made it unique in the retail market in relation to its contemporaries. However, rather than focus on the industrial concerns of creative production on the platform, my investigation will turn towards how hacking and piracy cultures exploited these unique features as a means of pirating Dreamcast software. By exploiting the unique properties of the platform as a catalyst for piracy practice, these hackers gleaned in depth knowledge of its operation. Sharing this knowledge enabled new means of creative practices centred on the Dreamcast by online hacking and modding communities.

My investigation will then examine a number of works made by members of these communities. This will enable me to investigate the means by which post-commodity fan

cultures engage with digital platforms through the production of new works, and knowledge sharing practices, which in turn enable other members of the community to produce and distribute these works through online communities. For the examination of these works produced by Dreamcast fan, hacking, and homebrew cultures, I will investigate the works through conducting primary research in these online community forums, wikis, and websites, including *Racketboy*, *Ludibria*, *ISOzone*, *Dreamcast Scene*, and others. One of the primary challenges of engaging in web based research practices, is gleaning information from communities that often lack continuity in the archiving of information. Schneider and Foot (2004) have noted that these challenges often occur to do the fact that "web content is ephemeral in its transience, as it can be expected to last only for a relatively brief time" (2).

Due to this ephemerality, much of the documentation investigated in this thesis came only after successive research attempts. Often, links from sites discussed in this work, led to websites that no longer existed. Operating as part of a "Web Sphere", which is a "hyperlinked set of dynamically defined digital resources spanning multiple websites deemed relevant or related to a central theme" (Schneider and Foot, 2003, 4), the content of the websites under analysis in this thesis shift over time. As a direct result of this shift, I account only for the information gleaned at the time of undertaking this research.

As objects under investigation, these websites are but one component in understanding the subcultures centred on the Dreamcast. In addition to an examination of how these communities create a knowledge culture surrounding these practices, I will download, burn, and play hacked and homebrew games made by members of these communities, which are the end result of this knowledge sharing. Investigating the creative works directly from these communities, while accounting for the technical tutorials that enabled their production, will enable a deeper understanding of the "communicative actions and

structures for action" (ibid, 6) that enable these types of creative production through the communities that produce and share this knowledge.

As part of Dreamcast-based "web spheres", the sites which contain these tutorials, are the community's central means of gleaning information in order to create new works for the Dreamcast. I will outline the specific technological considerations being discussed on these sites in relation to the Dreamcast, while charting the nature of social practices within these communities to illuminate common threads. This investigation, then, marries the technological considerations of the platform with the social and cultural practices of these post-consumer producers, as articulated through online communities. By incorporating an investigation of "online action [...], which manifests and enables the production, inscription and experience of cyberculture" (Schneider and Foot, 2004, 1) with platform specific practices, I can focus my attention on the creative and social practices of fan cultures which have thus far been overlooked by platform studies.

However, in order to fully investigate the platform as a post-retail commodity object, it is also necessary to examine the means by which fan collectors' cultures regard obsolete gaming technologies and their software. I will accomplish this investigation by incorporating the discourse of retro-collectors' publications, and discuss how these collectors' practices intersect with Dreamcast piracy cultures. Examining this relationship will provide a richer understanding of the varying cultural markers that become ascribed to a digital platform over time. While piracy cultures engage in hacking and modifying digital platforms in order to pirate games, their practices come into contact with the gaming industry in a number of ways, but these are not always in direct conflict with the perceived value of works produced by the gaming industry.

It is my belief that only through a methodology which accounts for the technological, social, cultural, and economic considerations of a digital platform over time that a truly

comprehensive investigation of digital devices can be undertaken. While the methodology of platform studies can account for much of this, the execution of the method through privileging only industrial models of production limits the larger analysis. It is through extrapolating the platform methodology beyond its current scope, into post-commodity cultures and collectors' markets, that will enable a deeper and more nuanced study of the Dreamcast platform.

CHAPTER 3

The Commercial History of the Dreamcast

Figure 2. The Sega Dreamcast Gaming Console (Sega Enterprises, Inc)



The first of what is regarded to be the sixth generation of home gaming consoles, the Sega Dreamcast was released to the North American consumer market in September of 1999. With a 128 bit processor, (being double that of the previous generation), larger capacity disc storage, and a variety of unique hardware features, the Dreamcast was a leap forward from the previous generation of game consoles. With no rivals on the retail game market during the first seven months of its release, the Dreamcast enjoyed an initial commercial success. As the first of a new generation of consoles, the system boasted many firsts for a gaming platform, some of which were specific to the platform, others which were carried on in future consoles by other console manufacturers.

3.1 The Visual Memory Unit (VMU)

Figure 3. The Visual Memory Unit for the Sega Dreamcast. (Sega Enterprises, Inc)



The Visual Memory Unit (VMU) was the only removable gaming memory unit which also featured its own small Liquid Crystal Display (LCD) as well as a gaming directional

pad and several buttons. The VMU was designed to display additional information from selected games, as well as portable mini games that could be played anywhere due to an internal battery. However, the device "didn't make a lasting impact on memory device design" (Wilde, 2009) due to its high rate of battery consumption. As a result many developers of Dreamcast games never took advantage of this unique piece of technology, as "too few utilized it as an informational display, and instead opted for a super-deformed character or other amusing-but-useless application" (ibid).

3.2 Modem and Broadband Adaptors

Figure 4. The Dreamcast Modem, partially removed from the console.



Included in the original hardware package of the Dreamcast was a 56k/modem, making it the first console capable of online multi-player gameplay. Along with this hardware, Sega created Sega Net, a network specifically designed to facilitate online gameplay for Dreamcast owners. Sega Net was not simply a network to which players connected, but it was also full Internet service provider. Players had to subscribe to this service as they would any other Internet service. By January 2000, there were 300,000 US subscribers to the service (*Console Database*), but these players faced issues of lag and connectivity as the modem proved to be prone to "normal dial-up modem problems like disconnects, losing contacts with opponents" (O'Toole, 2000), and was thus replaced with a Broadband adaptor (BBA). Using a standard serial data port, the Dreamcast Modem was removable, and as such Sega sold the BBA as an accessory to the console. With the

higher capacity for the exchange of data, Sega also released its own web browsing software (made by software company Planet Net), as well as a QWERTY keyboard, hoping to have its players also use the device for browsing the web.

Figure 5. The Dreamcast Broadband Adaptor (Sega Enterprise, Inc)



The broadband adaptor also allowed for more stable online gameplay. However, "Sega never really managed to exploit this facet to its fullest" (Porter, 2009, 247), and, as a result, the Dreamcast's capabilities of online play were left neglected by software developers and gamers alike. While underutilized by Sega, it was the console's ability to communicate via a broadband connection with its own unique IP address that became a key component in the rise of piracy of Dreamcast software.

3.3 The GD-ROM Disc Format

Central to the Dreamcast's unique properties as a gaming platform was Sega's introduction of a new format of digital disc media. Rather than using the CD-ROM technology of the previous generation, Sega partnered with Yamaha to create a new proprietary disc format known as GD-ROM. Called "giga discs" (CD Media World, 2000), the GD-ROM format boasted a storage capacity of one gigabyte, rather than the typical 700 megabytes of the standard CD-ROM. While the purpose for this initially seemed to increase the amount of information available for game developers to utilize in the creation of games, another purpose was intended in the use of these discs.

Figure 6. A view of the dual layers within a Dreamcast GD-ROM disc (Sega Enterprises, Inc)



GD-Rs boasted a greater capacity, and as a result, boasted larger games with higher quality graphics than previous consoles. In addition, the discs' proprietary structure became the Dreamcast's primary method of copyright protection. GD-R discs used a dual layer system which consisted of a small inner track of 35 megabytes (housing the disc's booting protocols) and a larger outer layer of one gigabyte which contained all of the game information. Sega's trademark was stamped into a small area of the disc, which acted as a border between the two layers of data, but it contained no digital information. This new format of digital disc media could only be read by the GD-ROM drive manufactured for the Dreamcast. This dual track system rendered information the GD-ROM disc incapable of being copied by traditional writable CD-ROM drives in home computers of the era. It was believed that Sega had created a format which would quell piracy for the new console. However, "the GD-ROM format was completely undermined by the console's support for the Mil-CD format, which allowed the console to boot from a standard CD-R" (Ayoub, 2012). An additional problem with the GD-ROM drives is that they were incapable of playing back DVDs. One of the issues cited as being responsible for the demise of the console was the lack of compatibility with this new video media format, which "later proved a costly mistake" (Porter, 2013, 244). Seven months after the release of the Dreamcast, Sony had released its successor to its popular PlayStation console.

Sony's PlayStation 2, released in March of 2000, proved to be one of the contributing factors in the Dreamcast's demise. With the inclusion of a DVD-ROM drive, the PS2 could play any commercial DVD, this extra functionality proving fatal to Sega's proprietary GD-ROM format. Within a year of the release of the PlayStation 2, Sega abandoned the console and announced its "plans to restructure its business by focusing on selling software to its previous rivals, Sony's PlayStation2 and Nintendo's Game Boy Advance" (BBC online, Sega Scraps the Dreamcast, 2001).

3.4 Beyond the Commercial Expatriation of the Dreamcast

The study of the history of digital gaming devices focuses primarily on the consumer lifespan of gaming platforms, yet it had done little to acknowledge the cultural conditions of a platform after its expatriation from the consumer market. In 2001, when Sony announced that it would no longer support the console, the corporation effectively abandoned its support and any further development for the Dreamcast. Once relegated to the realm of commercial obsolescence, the perceived value of the Dreamcast diminished. In its initial stages as abandonware, the Dreamcast succumbed to "an obsolescence [that] is frequently a socially imposed condition" (Newman, 2013, 86). As a commodity that found itself superseded by the introduction of newer platforms manufactured by its rivals, the Dreamcast's use value and exchange value diminished. Thompson, McAllister, and Ruggill note that the social conditions ascribed to a commercially expatriated gaming console are crucial in understanding the ongoing narrative of innovation and obsolescence that defines the mainstream historical account of gaming culture. Once relegated to the status of abandonware, these consoles are disregarded, as game consumers yearn for the latest innovations. An abandoned platform is no longer "capable of provoking the novelty necessary to stake a claim on wonder, or at least that part of

wonder engendered in the playing of the newest game on the newest console"

(Thompson, et al. 2009).

Newman's analysis of old games charts the ways in which the perceived value of abandoned gaming platforms and their games shift over time. According to Newman, games "take part in complex journeys as they move through different categories from 'unreleased' through to 'unused', 'unwanted' and beyond" (Newman, 2013, 85). These categories are part of larger marketing strategies used by "marketers and retailers to code these games as used up and superseded" (ibid). As such, games journalists and marketers hold influence over gamer cultures and consumers, who look forward to the latest games, latest devices, and most recent innovations, "through the construction of an economy of perpetual innovation and upgrade (ibid, 88). Over time, however, the perceived value of video games, diminished through expatriation, can be recuperated through the transformation of these titles from used games to vintage games.

While there is no set timeline in the culture for regarding games and gaming hardware as vintage objects, the Dreamcast was relegated to this category several years after its disappearance from the commercial market. What was once available as a retail commodity now found its way to secondary markets such as flea markets, online web auctions, and, more recently, independent video game stores specializing in vintage gaming artifacts. This movement from used to vintage is socially constructed within gaming communities as well as through popular publications, which act to recuperate and valorize so-called retro gaming culture.

While games journalism catalyses concepts of obsolescence, it also plays a central role in this reclamation of value in vintage games. This value, for gaming collectors, is determined through perceptions of scarcity as well as "continued valorization in 'best game lists' published in specialized magazines and websites" (Newman, 2013, 92). In the

50th issue of *Retro Gamer Magazine*, Damien McFarren examines the history of the Dreamcast, key figures in its development, and its expatriation from the retail market. While his analysis offers in depth information on the development of the console, the article concludes on the end of the retail life of the Dreamcast. The article is punctuated with a "Perfect Games" list of ten of the Dreamcast's most notable game titles, and a further "top 50" category. These lists, and the story of the development of the console, add to the narrative of innovation in the larger history of the videogame industry by taking a "second look [...] as he [McFarren] tearfully revisits one of the industry's most underrated contenders (McFarren, 2009, 67).

McFarren's article highlights how the popular examination of digital platforms focuses on what made these objects great, or underrated pieces of gaming technology, in the eyes of fans. A self-confessed "fanboy" in the article, McFarren teases out a key component of retro-collector cultures and their focus on the nostalgia for gaming culture's past. Yet, the parent publisher of *Retro Gamer*, the UK's Imagine Publishing, also publishes other gaming related magazines such as *Play*, a Sony Playstation centered publication; *X360*, which focuses on Microsoft's XBox 360; and *GamesTM*, centred on new releases and developments in the games industry. In this regard, these publications look both forward to the continual innovations of the industry, as well as look back, serving to canonize these same devices and their games once relegated to abandonware. The relationship between these perceived dichotomous perspectives serves to underscore the role that popular games publications take on in shaping the larger discussion of the history of the medium, acting to fetishize gaming technologies as consumer artifacts, no matter which categories they may inhabit.

Within fan retro-collector cultures, the value of these abandoned objects is still tied to the platform's perceived role in the history of video games. Thompson et al. discuss this

antiquarian perspective on the value of vintage games: "in the homebrew, retro, and collectible markets, it is the new things, the new playables that are strangely obsolete and undesirable" (Thompson, et al, 2009). Similarly Fiske has addressed the "shadow economy of fan cultures" (Fiske, 1992, 45) and the motivations behind fans who collect artifacts based on their fandom. As retro-collectors, Dreamcast fans seek to acquire the valorized titles from the platform's history, the perceived value of these collections lying "in the extent of the collection rather than in their uniqueness or authenticity as cultural objects" (ibid, 44). In this manner, fans of gaming culture's past, who also identify as collectors, do little to expatriate the Dreamcast from its consumer origins. Rather, the popular discourse surrounding the console's value is still inextricably tied to its definition as a consumer object.

Fan collectors simply acquire vintage Dreamcast games and play them on the console, a method of interaction which remains unchanged from those at the height of the platform's popularity as a retail object. However, these retro-collectors are only a single facet of fan communities centred on obsolete gaming platforms. Where fan collectors purchase, play, and interact with the platform in previously prescribed manners, fan piracy, hacking, and modding cultures seek to open the platform, discover its inner workings, and exploit the platform in new creative ways. These two divergent practices highlight the dichotomous nature of fans, who often inhabit the role of both consumer and cultural producer. What was once the "fetishized [and] revered" (Cantanese, 2003, 350) object of Dreamcast fans has now become a tool for the "cargo cult" of post-consumer tinkerers. No longer satisfied with prescribed methods of interaction (that is, the playing of commercially released video games), they become engaged in a practice which seeks to open the "black box" of the platform, understand its complexities, and

create new tools for others to use in order to manipulate the various operations of the platform.

The following chapter discusses the history of piracy as relates to the Dreamcast. It was these practices which further enabled fan hacking and modding cultures to create new games and software applications for the platform. No longer a device solely defined by its ability to play commercial game titles, the Dreamcast has become a new tool for new strata of creative practices, which act to alter the relationship between fans and the platform.

CHAPTER 4

The History of Dreamcast Piracy

A key challenge in this investigation lies in attempting to chart the history of Dreamcast game piracy. By undertaking a thorough examination of a large number of Dreamcast centred forums and websites, many links to pages which document these practices led to websites that no longer exist. As a result, some hacking groups and individuals claim authorial credit over certain developments within this practice, while other discoveries that have led to the proliferation of these practices have gone undocumented. What follows is an account of Dreamcast piracy practices, and, where possible, the history of the development of these practices, emphasizing the specific technological considerations which enabled hackers to exploit the platform. These discussions centre primarily on the GD-ROM drive and Broadband Adaptor, two key devices which were used in the piracy of Dreamcast software.

4.1 Ripping GD-ROMs

Due to the conventional CD-ROM drives' inability to read the information on the Dreamcast's GD-ROM discs, hackers developed a system which was used to connect the console directly to a PC. By using the Broadband Adaptor and exploiting its communication capabilities, hackers could have their computers communicate with the Dreamcast via a networked Ethernet connection. On the website *Dumpcast*, site founder and forum administrator darcagn provided step by step instructions for new users to learn how to transfer GD-ROM game data to their home computer. Once the Dreamcast is connected to a user's home network, the software package *http-d-ack* could then be used to send the information read from the Dreamcast's GD-ROM drive and then "dump" this information from the Dreamcast directly to the PC. This was accomplished by directly accessing the console's IP address via a conventional internet browser, and downloading

all of the files found on the disc to the PC. However, dumping the data to PC was only the first step in getting pirated games to play on the Dreamcast.

Due to the larger capacity of the GD-ROM discs, Dreamcast dumps could not simply be copied onto blank CDs and burned. In order to fit the game on a CD-ROM, video and audio files from the copied game needed to be "compressed, cut out and/or downsampled" (Racketboy, 2005). Racketboy's account of this process highlights the expert knowledge necessary to successfully pirate games. In order to accomplish this task, pirate/gamers needed to possess intimate knowledge of the file structure within a Dreamcast game disc. This meant understanding not simply where these files were located (were they to be removed), but how to manipulate these files in order to create a playable game disc. Racketboy notes that for most users, these tasks may well be beyond the level of technical skill required, and as such, these users "are just better off leaving this process to the few groups that have experience with the subject" (ibid). As a result, expert hackers, dumpers and rippers produced the bulk of bootlegged games and distributed them. It was the work of these groups that also developed the first tools which enabled these copied games to play on the Dreamcast without the aid of any hardware modifications such as modchips.

4.2 Utopia & Kalisto

The hacking collective Utopia announced in the summer of 2001 that they had cracked the hardware copy protection on the Dreamcast (Smith, 2001). With the creation of the *Dreamcast Boot CD V1.1*, Utopia enabled anyone to play Dreamcast disc image files on a console, wholly circumventing the copy protection protocols of the platform. In their release NFO file (see figure, below) the group encouraged others to build upon their

In the body of their NFO file (short for info), Kalisto begins by giving credit to the Utopia team: "before we even start on about this release, we have to show our undivided respect for the folks at Utopia. What you did was truly impressive!" (Kalisto, 2000). Kalisto's recognition of the work done by Utopia is worth noting, due to the fact that in ripping scenes, there is a general sense of community, one that works to recognize and build upon the works of others. Rather than simply taking credit for distributing pirated game .cdi's (compact disc image files) that were wholly contained and ready to be burned, groups often would list all of the work by previous crackers within these NFO files. With successive releases, these expert groups disseminated a range of pirated Dreamcast games through decentralized file sharing networks. By connecting to these networks, non experts could then download the .cdi files, and burn them using a special disc burning utility called *DiscJuggler*.

4.3 Distribution Networks

With the release of *Boot CD VI.1*, "Sega said it will vigorously pursue and prosecute any Web site that distributes Dreamcast games illegally" (Smith, 2000). However, according to Smith's article, Dreamcast pirates at this time were not using websites as the primary means of distribution pirated game copies; instead, these files were being distributed through decentralized networks such as Internet Relay Chat (IRC) and peer-to-peer networks such as Gnutella. During the retail life of the Dreamcast, it was these networks that distributed these games to players engaged in burning digital bootlegs of the console's software. However, as Sega withdrew its support for the console, these communities moved to more centralized spaces on the internet, with a large number of websites, and forums emerging for fans of the now defunct console to share information about the system, its vulnerabilities, as well as pirated game files.

Websites such *Dreamcast Junkyard*, *Planet Dreamcast*, and *DCemu* (short for Dreamcast Emulation) became popular hubs for fans after Sega discontinued the console. Larger websites such as the *IsoZone*, a site dedicated to the distribution of game ROMs from the history of abandoned gaming consoles, began to create databases of pirated Dreamcast .cdi files, which any member of the public could download freely and easily. To date, these websites continue to operate as active loci for Dreamcast fan based piracy practices.

4.4 Recent Developments

It has been more than a decade since Sega abandoned support and development for the Dreamcast, yet fan cultures surrounding the console continue to thrive through online communities. With the console now long removed from store shelves, and accessories and parts becoming increasingly difficult to locate, enterprising fan/ hackers have taken it upon themselves to create new devices which allow them to explore and manipulate the console. On the *Racketboy Dreamcast Forums*, user s8n posted a series of photos documenting a custom built broadband adaptor (below) created by jj1om.

Figure 9. Custom made Broad Band Adaptor for the Dreamcast, jj1om.



Discussions in this forum thread centred around the current scarcity of Broadband Adaptors in online collector's markets such as *eBay* and *Craigslist*. Without the ability to connect a PC to the Dreamcast, game pirates and hackers cannot continue with the work begun ten years ago by their predecessors.

The most recent development in Dreamcast hacking culture came in 2010, when *IsoZone* member Anthony817 posted a new method of playing back copied games by another exploit that uses the broadband adaptor's serial port connection to the console. *DreamShell SD* is a piece of software, burned to a CD-ROM and played back through the console's GD-ROM drive. This software allows users to connect an SD card via the BBA and run games stored in the card's memory on the console. For the first time in the history of Dreamcast piracy, players are now able to play full versions of the game with full quality audio and video intact, given the high capacity of SD memory. To enable players to take advantage of this exploit easily, and without having to build their own custom connections between the BBA and the memory card, the *Alex DC SD Cardreader DIY* (figure, below) was released for online sale in 2011.

Figure 10. The Alex DC SD Card Reader DIY.



This modified USB SD adaptor sees the USB connection replaced with that of a standard Ethernet CAT5 cable connection. This enables players to load games onto the SD card, place the card in the adaptor, and plug the device directly into the BBA. By eliminating the need to burn games to disc, this latest development has reinvigorated the Dreamcast

scene, enabling future fan based development for the console, while also catalysing a return to fan collector practices.

4.5 The Pristine Backup and the Return to the Canon

With the introduction of *DreamShell* and the Dreamcast SD device, fans could now create or download game titles that were not bound to the storage capacity limits of the CD-ROM format. As a result, Dreamcast rippers revisited the project of copying Dreamcast game discs for online distribution. No longer bound to file size limitations, this renewed ripping practice became part of a larger "Pristine Dreamcast Backup and Preservation Initiative" (Racketboy, 2007). Rippers engaged in this resurgent practice "have taken the initiative to rip their games in their complete form" (ibid), copying Dreamcast game discs in their entirety and distributing them online. Using the same copying techniques outlined earlier in this chapter, this practice marked the first instance in the history of piracy on the console where fans could access any pirated game title from the Dreamcast catalogue in its entirety. The process of removing files to meet storage limitations was no longer an issue for those using Dreamcast SD devices.

As a result of the creation of these "pristine backups", fan pirates within the community had in some way recuperated the consumer project of fan based collecting practices. As Fiske has noted, fans who engage in collecting often do so with the intent of "accumulating as many as possible" (Fiske, 1992, 44). This notion of "completeness" links directly to the practices of fan collectors: those who engage in the illegal downloading of .cdi disc images for playback on the Dreamcast using the DC-SD device are now doing so to complete their collections of in-tact Dreamcast game titles. This fan collector's practice highlights the larger project of canonization of commercial Dreamcast

games. Fans who have not acquired certain games, due to material scarcity, could now complete their collections by finding digital copies of these games online.

In this manner, fan pirates became integral to the process of the socially constructed perceived value of Dreamcast games. With this value being by and large determined by a number of factors, including recantations of what had made the Dreamcast and its game so desirable by its consumer fans. While piracy practices acted as a catalyst for fan interventions on the console, they also served to recuperate, in part, its consumer legacy. This return to copying and distributing games in-tact reiterates the connection between fan collectors and those who engage with the platform in more complex ways. In this regard, the Dreamcast became both an object of commercial fandom, as well as a platform for creative exploration outside of sanctioned practices. As fan cultures engage in the creative production of works based on the objects of their fandom, so too do active Dreamcast fans. While the technical skills required for the production of creative projects for the Dreamcast are advanced, many of these works align themselves with larger fan based creative remix practices.

CHAPTER 5

Dreamcast Video Game Mods and Remix Practices

The piracy practices centred on the Dreamcast outlined in the previous chapter provided fan hacking cultures with the foundational knowledge of the specific software structures to open the platform to new methods of creative interaction. Sharing this knowledge with online Dreamcast fan and hacking communities prompted fans to open the image files of pirated Dreamcast games and glean deeper knowledge of these underlying structures. Once this knowledge was acquired, fan hackers and homebrew game developers began to

explore and modify these files in order to hack games and create new works for the platform.

Where the previous chapter outlined the history of this piracy practice, this chapter examines a number of creative works that were enabled by its legacy. While some of the works produced by homebrew developers are new games with wholly original content, the bulk of the games created appropriate imagery, sound, and iconography from other games, as well as other forms of popular media, including film, comic books, and television. By poaching elements of popular media and recombining them into game media for the Dreamcast, these practitioners are using the popular iconography of videogames to re-skin, modify, and alter existing games for the Dreamcast. The works examined in this chapter explore these fan modding practices, positioning them in the larger legacy of other practices common within the convergent media: the practices of remix cultures.

Remix practices "take cultural artifacts and manipulate them into new kinds of creative blends" (Knobel and Lankshear, 2008, 22). Originally used as a descriptor for the manipulation of songs within popular music, digital remix cultures have "expanded to include music and sound as well as moving and static images taken from films television, the Internet, personal archives and elsewhere" (ibid). In this definition, the medium of video games is noticeably absent. However, in their article Knobel and Lankshear do address the medium as a possible candidate for remix through the creation of Machinima, which is the creation of film and video work through the appropriation and manipulation of video game footage. Other scholars have also addressed Machinima as a remix practice. In "Video Game Art: Remix, Reworking and Other Interventions", Clarke and Mitchell also place the creation of Machinima among remix practices.

While both of these works discuss Machinima as remix, they do not discuss any other practice within the medium as being classified as remix. When framing their discussion of games as a medium for remix, Clarke and Mitchell offer this definition: "the use of video game iconography in other media (either taken and manipulated digitally or reproduced by hand)" (Clarke & Mitchell, 2003, 2). For the authors, the practice of creating new games, hacks, or mods of other games fall into a different category, one which they call "reworking." Clarke and Mitchell's attempt to create a classification of creative practices within gaming culture is a notable addition to understanding these practices; however, their definitions do not seem to account for the larger history of remix practice.

The practice of audio remix takes sequences from different songs and recombines them to create a new hybrid song, whereas a video remix will take elements from different source footage and combine them into a new work. Given the historical practice of remix, one which often is contained within a specific medium, Clarke and Mitchell's definition appears to be, at least in part, erroneous. The creative practice of modding, which often takes the iconography from a specific video game and applies it to another existing game, can certainly fall under Knobel and Lankshear's definition of remix. These practices re-purpose the iconography of games in the creation of whole new gameplay experiences, and as such, are as much remix as they are reworkings. Taking a game and altering its original content, graphics, rules, and mechanics thus offer a new form of remix practice unaccounted for to date by both remix and game scholarship.

By aligning these hacking and modding practices with larger digital remix cultures, it is evident that these practices are not new phenomena within fan creative cultures, but rather are part of the larger legacy of fan cultures, one whose underlying structure is built upon the practice of poaching. These works may require a larger degree of technical

knowledge and expertise in relation to other remix practices. However, the process of altering cultural artifacts (that is, games) to create new iterations and interpretations, creates a dialogue between "the original source material and the work that appropriates it" (ibid) in the same manner as other remix practices. This chapter will explore the variety of remix practices in which Dreamcast fan and hacking cultures have engaged in, from the altering of a game's file structures to the creation of entirely new games. Each of these instances operates as an example of how altering existing games or creating new works can be understood as a platform specific form of remix practice.

5.1 Ripping as Remix

As outlined in the previous chapter, the storage limitations of conventional CD-ROM media, as compared to those of the proprietary GD-ROM format, prevented Dreamcast software pirates from creating direct 1:1 copies that could be played on the console. However, not every commercially released title used the full storage capabilities of the GD-ROM. As a result, many pirated Dreamcast games were copied and released in their entirety. Yet, for those games titles that did make use of the GD-ROM's full capacity, a further step was necessary in order to create viable pirated copies. Due to the disparity between the 1gb storage capacity of the GD-ROM, and the 700-800mb storage capacity of the CD-ROM, Dreamcast pirates had to remove files from a game's data in order to create burnable CD-ROM versions of these games in a process known as "ripping."

This process of ripping files in order to meet the storage limitations of the CD-ROM required advanced knowledge of the underlying files structures of a .cdi Dreamcast game disc image. By using off the shelf disc image compiling and extracting software such as

alcohol120% or *daemon*, these tools enabled Dreamcast software pirates to discern these underlying structures in order ascertain which files were necessary to run a game, and which files could be deleted safely. While the previous chapter outlined the original practical considerations of ripping files, I posit that this process is also the initial instance of a remix practice of commercially released games for the Dreamcast.

Due in large part to the decentralized nature of the culture, different hacking "teams," such as Kalisto, Eschelon, domexica, kanimoge, and many others, would often rip the same commercial titles and then release them online. With a variety of rippers engaged in this practice, individual releases of pirated games by these groups differed in a number of ways. In a process of trial and error, game pirates had to discern which files could be safely removed from the GD-ROM game disc file structure in order to maintain a playable game disc image. The files that used the greatest amount of storage on a GD-ROM were the soundtrack audio and video cut scene files. Each hacking collective would often choose to remove different elements of a game. Where one would choose to remove the video cut scenes from a game to preserve all of the elements of the core gameplay, others would choose to remove the soundtrack audio and compress the video files to a smaller file size (and lesser quality) to preserve the greater overall narrative experience of a game.

While the result of pragmatic concerns, this process of ripping is the first instance of the alteration of game media on the Dreamcast. By changing the experience of any given game through these practices, Dreamcast piracy groups are the first practitioners of remix for the platform, altering the cultural artifact of the game to create the new creative blend that Knobel and Lankshear outline in their definition. Not all commercially released games used the GD-ROM's full storage capabilities, yet some rippers still ripped files

from the game in order to facilitate a faster files transfer online. On Racketboy.com,

Racketboy notes:

"*Mr. Driller* and *Bangai-O* are prime examples as they have sound effects, but the background music is completely removed. What is interesting about these cases is that I don't think it was completely necessary to rip the music completely out in order to fit it on a CD, but the ripper figured it would save space and bandwidth when distributing the ISO over the Net".

(Racketboy, 2006)

These rips differ vastly from previous forms of remix such as music and video remixes, in that rather than manipulating or altering the sound or visuals of a game, these works alter the experience of playing a game. Players who chose to download these releases, in cases where the games were too large to fit on a CD-ROM, will not be playing the commercial releases of the games, but a version of the game edited by the piracy collective that released it online.

In this manner, Dreamcast pirates inadvertently created a new instance of game remix, one which omits media to alter the state of play, rather than the hybrid forms associated with conventional remix practice. It was this practice of ripping as remix which led to larger remix practices for the platform. Through the act of copying and ripping Dreamcast GD-ROM games, these piracy groups uncovered the underlying file structure of all GD-ROM based games. This knowledge, once shared through online communities, enabled other game hackers to exploit these file structures to modify existing games further, thereby creating other forms of Dreamcast game remixes.

5.2 Audio Swapping Mods

One of the most accessible ways in which Dreamcast fans can engage in creative remix production on games for the platform is through the creation of audio swapping mods. These modifications see the replacement of a particular game title's musical soundtrack with music chosen by the modder. This particular type of mod can only be accomplished on certain games that were released for the platform, ones which contain a specific kind of digital audio file called .ADX audio. While there are numerous game titles which use the .ADX audio format, fan hackers who engage in this practice have focused their attention on two particular game titles: Capcom's *Marvel Vs. Capcom 2* (2000) and SEGA's *Crazy Taxi* (2000).

While fan opinion and motivation behind the practice of replacing the audio on these games differ, it is generally noted that the soundtracks to both games have left the fans feeling they lacked the quality that they are accustomed to while playing digital games. As both Jenkins and Fiske have noted, fan creative practices often focus upon what fans perceive as a lack in their objects of fandom, and then proceed to create works which act to repair these breaches. The jazz soundtrack for *Marvel Vs. Capcom 2*, composed by veteran video game composers Tetsuya Shibata and Mitsuhiro Takano, has been repeatedly noted as being "incredibly slow and boring," pairing a genre of music that "does not fit the game at all" (Racketboy, 2006). In the case of SEGA's *Crazy Taxi*, the soundtrack is comprised of only six songs, three by the alt-rock band Offspring, and three by the punk band D.O.A. Fans have noted that the repetitious nature of these songs limits the game's replayability as "the music grates after a while" (ibid). Motivated by these perceived shortcomings within the game, fan hackers have taken it upon themselves to create these remixes as customized rips of both games.

While there are countless iterations of audio remix editions of both games, there are works that are considered notable by various fan sites and forums. Some of these works

were produced by remixers Mozgus, TuxtheWise, TNF, Juze and Anthony817, who were seen by others as "improving games that are no longer sold on the Dreamcast for the original company's profit" (Fred, 2009). With the perception that these hackers are improving the games by modifying the audio, the releases by these practitioners retain the original game titles, but are given suffixes that explicitly align these practices with the larger remix culture. Given suffix additions such as "Heavy Metal Mix," "Dubstep Mix", and "Accurate Mix," these game releases have seen large numbers of downloads, distributed through websites such as DreamISO, the *ISOZone* and others. Most popular among these remixes is Anthony817's *Marvel Vs. Capcom 2: Michael Jackson Remix*, with over 27,000 downloads.

The *Michael Jackson Remix* is exemplary of the craft that Dreamcast music remixers put into their work. On the information page on *ISOzone* for this remix, Anthony817 notes that the music in his release "has been edited to loop as seamlessly as possible" (Anthony817, 2009). The concept of optimization is repeated throughout other online comments discussing this remix practice. The discussions of how to seamlessly loop songs to match the title animation sequence of *Marvel Vs. Capcom 2* parallel other fan practices such as AMV (Anime Music Videos) that Knobel and Lankshear examine. The authors discuss the art of the remix, that is to say, "the aesthetics, appreciation, form and composition dimension of remix practice (Knobel and Lankshear, 2008. 26). In their examination, they outline how AMV remixers are preoccupied with the concept of "synch" within a particular video remix, relating to how well the onscreen movement and action in the edited video match the tempo and rhythm of the music being used.

Noting that the AMV community offers "explicit suggestions for expert performance that could be built into formal education considerations of aesthetic creativity" (ibid, 27), Knobel and Lankshear highlight how value is attributed within these communities to a

specific creative work, as well as how remix communities encourage the creation of new works through sharing the specific knowledge needed to accomplish such projects. While there is no central information depository on how to accomplish Dreamcast music remixes, many members of the community who have created these works have written tutorials in order to encourage others to create their own. While Racketboy notes that "there isn't one perfect way of doing this" (Racketboy, 2006), there are two primary tutorials that outline the process available online.

These tutorials, by Lil C and Kenshin, found on *CD-ROM Guide.com* outline a process whereby fan hackers can use free software tools in order to replace the audio files on *Marvel Vs. Capcom 2* or *Crazy Taxi*. It is clear when reading these tutorials that "the craft of remix means knowledge of its technical aspects" (Knobel and Lankshear, 2008, 27). In order to create any remix, practitioners must have an intimate understanding of the technical considerations in order to create these works. Fortunately for the novice Dreamcast audio remixer, these tutorials, and the software used to create these remixes, require little knowledge compared to more elaborate methods. The software required for this process is a combination of common off the shelf media software combined with other software tools created by the hacking community.

Both Lil C's and Kenshin's method requires audio remixer to use eight different pieces of software (*ISObuster*, *Cinepak*, *Adxencd*, *Streambox Ripper*, *Sound Recorder*, *Dummy File Creator*, *Dummy Calculator*, and *CDwin*) in order to create a new game audio remix. Using *ISObuster*, users can take the disc image file of either *Crazy Taxi* or *Marvel Vs. Capcom 2* (typically downloaded illegally via any number of ISO or ROM hosting websites), and extract all of the files that comprise the disc image. Once the files have been extracted, users need to locate the .adx audio files of the game's soundtrack. *Sound Recorder*, *Streambox Ripper* and *Adxencd* are used to edit and convert

conventional .mp3 music files to .wav audio format files and finally to .adx audio files. *Adxencd* is also used to create a looping function for each track so that it will loop seamlessly once the file is loaded into the game. Once all of the audio files have been edited and encoded as .adx files, all of the files must be renamed to match the names of the audio files contained within the original image file. Then, users simply replace the original audio files with the ones that they have created and renamed. The final step in the process requires the use of *CDwin* to recompile all of the game files that had been previously extracted (now containing the replaced audio files), as an ISO and burn the disc image to CD-ROM using their computer's CD-ROM drive. Once all of these steps have been followed, a new audio remix version of either *Crazy Taxi* or *Marvel Vs. Capcom 2* has been created.

These ISO files are also uploaded to websites such as *DreamISO* and *ISOzone* and are made available for other members of the community to download, burn, play, and give feedback on through the comments section. As loci for distribution and discussion, these websites also distribute other fan made works, ones which build upon the knowledge of game audio remix practices and expand into the creation of custom fan made video games. Among these works are games which have been created using open source customizable fan made game engines, such as *Beats of Rage*, developed by Senile Team. This game engine allowed fan modders to create new game based remixes in the form of two dimensional side scrolling video games.

5.3 Beats of Rage

Founded in 2003, the Dutch homebrew development collective Senile Time created a video game engine called *Beats of Rage*. Based on the 1991 Sega video game *Streets of Rage*, this open source engine provided a means for the creation of

customizable 2D side scrolling "beat 'em up" video games. The original *Beats of Rage* (2002) was a single original game released for PCs rather than gaming consoles. In an interview with *Sega Addicts*, Roel and Jeroen van Mastbergen discussed the origins of the original mod and its growth into a customizable game engine:

“Nobody is making a good 2D beat ‘em up anymore, and we can wait until the end of time for ‘*Streets of Rage 4*’, so why don’t we make a beat ‘em up?” So we did! We called the game *Beats of Rage*, as a tribute to *Streets of Rage*, and we borrowed character sprites from the *King of Fighters* series.” (WestGarth, 2012)



Figure 11, left. SEGA's *Streets of Rage*. Figure 12, right. Senile Team's *Beats of Rage*.

Roel Van Mastbergen's comment mirrors a recurring theme in the discussion of fan cultures, wherein active fan bases create new works based on popular franchises due to a perceived lack in the works being created by the companies that own these franchises. While the original motivation for the creation of *Beats of Rage* lie in the absence of the release of a commercial sequel in the *Streets of Rage* franchise, its use grew well beyond its original intent and was adopted by fan modders as a means of creating their own games.

According to Jeroen van Mastbergen the engine gained momentum and popularity when Neil Corlett released a port of the engine for the Dreamcast near the end of 2003. In the hands of Dreamcast fan hackers, *Beats of Rage* releases became a regular occurrence,

seeing more than a 100 games released in the past ten years by a variety of practitioners. Replicating the underlying structure and mechanics of *Streets of Rage*, *Beats of Rage* offered fan modders an opportunity to create their own side scrolling fighting games. This enabled members of the community to use *Beats of Rage* as a platform to make their own games, creating a new form of game remix by importing the characters, settings, and iconography from comic books, popular movies, and other video games.

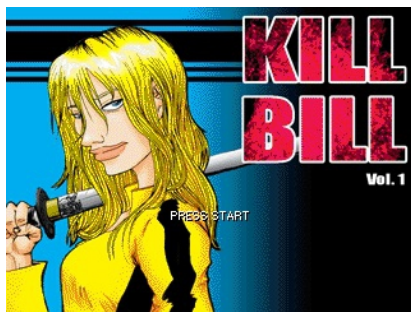
Originally titled *Bare Knuckles* in its Japanese release, the aesthetic of *Streets of Rage* uses anime and manga style influences in its game artwork, rendered in 16 bit graphics and animation. This common aesthetic condition can be found in many 2D side scrolling arcade and console games from the 1990s, which saw dozens of games in this genre released. Developers such as Data East, Midway, SNK, Capcom, Konami, and others all released titles that followed the same basic formula, using similar aesthetics and core game mechanics. Typically, a game in this genre sees players controlling a character who must move perpetually through each level from left to right, having to confront and fight a myriad of generic enemy characters. Each level sees an escalation of difficulty through the increasing numbers of adversaries as well as the introduction of new, more challenging enemies as the game progresses. The end of each level contains a boss, a unique enemy that players must defeat who is far more difficult than other enemies in each level.

With a relatively simple control schema, playable 2D scrolling characters are generally limited to several actions: jump, attack, grapple, and special attack. Jumps, attacks, grapples and special attacks are cued by player button activation, while grapples occur automatically when a player is in proximity to an enemy. While these game mechanics are not as sophisticated as contemporary games, they provided the Senile Team with a clear and simple game mechanic framework upon which to build the *Beats*

of *Rage* engine. With this framework in place, fan modders have taken the basic structure of *Beats of Rage* and built their own game upon it by adding their own characters, backgrounds, items, and music. Among the notable *Beats of Rage* mods released by fans are works which borrow from an array of popular franchises and have seen over 10,000 downloads (ISOzone). These include: *Beats of Rage: Kill Bill Vol.1*, *Beats of Rage: Crisis Evil 1 & 2*, and *X-Men: Beats of Rage*.

JaMbo87's *Beats of Rage: Kill Bill, Vol. 1* (2007), draws upon the “House of the Blue Leaves” sequence from Quentin Tarantino's *Kill Bill Vol. 1* (2003) as the inspiration for the mod. Playing the game as the Bride, the character in the film portrayed by Uma Thurman, players navigate through a recreation of the fight scenes from the “House of the Blue Leaves” sequence near the finale of *Kill Bill, Vol. 1*. With background art mimicking the environment from the film, and enemies appropriated from the film such as the Crazy 88, GoGo Yabari, and O-ren Ishi-i, *Beats of Rage: Kill Bill Vol. 1* operates as a fan homage to the film. Having never seen a video game release based on the film, JaMbo87's mod also integrates music and sound effects from the film's soundtrack, creating a game which appears as professional as any commercial release in the genre.

Figures 13 and 14. Images of *Beats of Rage: Kill Bill, Vol.1*.



NeverGoingBack's *Crisis Evil 1 & 2* re-imagines the popular survival horror game franchise *Resident Evil* (1996) as a 2D fighter. The commercial franchise was a seminal piece in the history of the survival horror genre and has spawned numerous sequels. Originally released for the Sony Playstation, *Resident*

Evil saw players navigating through mazelike three dimensional environments such as abandoned mansions and laboratories, solving puzzles and collecting items in order to progress. Eschewing these mechanics of resource management and puzzle solving that were unique features of the franchise, *Crisis Evil 1 & 2* takes the characters and settings of *Resident Evil* and places them within the arcade action genre. Porting the horrific creatures from *Resident Evil*, typically zombies and mutated animals, this remake removes the slow pacing and dark moody atmosphere of the franchise in favour of non-stop battles between the main characters and these creatures.

Figures 15 and 16. Images from *Crisis Evil 1 & 2*.



By importing these visual elements into *Crisis Evil 1 & 2*, but removing all other game mechanics that made the *Resident Evil* franchise notable, NeverGoingBack's *Beats of Rage* mod release effectively reframes the narrative of *Resident Evil* from suspense to action. Though it reframes the narrative, the game does in some way stay true to the original franchise's story events as a means of paying homage to *Resident Evil*. Fans who play *Crisis Evil 1 & 2* would already be familiar with the narrative of the original franchise and this mod allows them to encounter it in a new manner. One of the hallmark narrative tools used in *Resident Evil* is that of third person mystery; players only know as much about the narrative world of the game as the characters they control, uncovering clues and solving the overall mystery of the game. Embedded within *Crisis Evil 1 & 2* is

the assumption that players already possess the narrative information, so it is presented to them explicitly at the outset of the game.

The rendering of the game's assets follow the aesthetic conditions of the original *Streets of Rage* game, seeing the characters and monsters from *Resident Evil* represented in 16 bit anime / manga style rather than the 3D polygon renderings of the original franchise. In addition, the moody instrumental music from the original franchise is remixed in the soundtrack of *Crisis Evil 1 & 2*, adding drum beats and accelerating the tempo of the music to match the action oriented gameplay of the mod. As in other fan created projects, *Crisis Evil 1 & 2* acts to pay homage to the franchise that inspired its creation, yet reworks the narrative and iconography of the franchise into a new hybrid form that bears little aesthetic and tonal resemblance to the original products.

These two *Beats of Rage* mods pay homage to other media and games and retool them to work within the aesthetic and game mechanic confines of 2D fighter, re-imagining the franchises that inspired their creation. However, other examples of *Beats of Rage* mod creation operate differently as objects of fan creation. VicViper & Kungpow's *X-Men: Beats of Rage* is an example of a fan made work which attempts to remix the elements of two different commercially released arcade games. In 1992, Konami released an arcade 2D fighter based on the *X-Men* comic book franchise by Marvel Comics. This game incorporated the typical game mechanics common to 2D fighters that have already been discussed. In the same year, rival game publisher Capcom released a 2D arena style fighting game based on the *X-Men* franchise called *X-Men: Children of the Atom*. Konami's *X-Men* existed only as an arcade game until the company released a home console remake of the game for the Xbox 360 in 2010. Capcom's *X-Men* game was released to various home gaming platforms five years after its original release in arcades.

Released in 2007, VicViper & Kungpow's *X-Men: Beats of Rage* incorporates characters from both of these game titles and remixes them into a new side scrolling 2D fighter.



Figures 17 and 18. Images from *X-Men: Beats of Rage*.

X-Men: Beats of Rage incorporates five of the original six playable characters from Konami's *X-Men* game (Colossus, Storm, Wolverine, Nightcrawler, and Cyclops) and adds several other *X-Men* characters that were playable in Capcom's *X-Men: Children of the Atom* (Psylocke, Iceman, Jean Grey, Rogue, and Gambit). In place of the generic enemies common in *Beats of Rage* mods, the creators incorporated unique enemy characters from the *X-Men* comic franchise. In this manner, this mod captures the spirit of the fan perspective of improving the games which inspired its creation. As players navigate through the level of the game, they encounter adversaries that they would be familiar with, assuming they have read the comic books. This adds an additional layer of richness to the game's narrative, seeing players face notable icons from the franchise rather than throw away generic enemies that simply act as obstacles to their progression through the game. By incorporating these specific enemy characters, the *X-Men: Beats of Rage* mod achieves a level of craft not seen in the majority of its counterparts.

The craft involved in creating *Beats of Rage* mods requires knowledge of audio editing, the operation of the Beats of Rage engine, as well as the ability to create 16 bit character sprites, backgrounds, and animations. On the wiki for the *OpenBOR* engine, a manual has been created by the community as a means of providing step by step

instructions which will guide new modders through the process of creating their own *Beats of Rage* mod. When designing the engine, Senile Team created a user friendly file structure system that is simple to navigate even for those new to the process. With all of the essential assets needed for a mod organized in a simple structure, no coding is needed in order to create a *Beats of Rage* game. Modders need only place their own files in the appropriate folders (Background, Characters, Levels, Music, Scenes, Sounds, and Sprites) and rename them according to the files already contained within these folders, to build their own mod.

However, modders must possess the technical knowledge of how to create these various assets. All characters sprites within a *Beats of Rage* mod uses the animated GIF format. This requires modders to not only know how to draw sprites, but also to be able to create several versions of a sprite, in order to animate their walking, jumping, and fighting actions within the game. Some modders do not possess these skills, but they have found a way in which to capitalize on the work of another fan modding community. A popular PC based 2D arena fan made game engine, known as *MUGEN*, also uses the animated gif format to render character animations. Members of the *Beats of Rage* modding community often take advantage of the previous work done by *MUGEN* modders by taking these pre-made character animations and importing them into the *Beats of Rage* engine. By visiting a *MUGEN* site such as mugen.the-chronicles.org, modders can access a range of character and art assets created by members of the *MUGEN* community based on any popular gaming, film, television, cartoon or comic book franchise. While a further study of the *MUGEN* engine is necessary, what is of importance here is the way in which modders from one community “borrow” the works from those in another.

One of the other ways in which *Beats of Rage* modders appropriate art assets for their mods is through the use of background art from other video games. Several of the levels in *X-Men: Beats of Rage* use background art from the Konami game *Teenage Mutant Ninja Turtles: Turtles in Time* (1992). While it is unclear how VicViper & Kungpow incorporated these images into their mod, there are a number of ways they could have accomplished this task. In this regard, this method of appropriation is illustrative of the technical ingenuity possessed by fans, particularly by those who possess the technical skills to create a mod, but perhaps lack the artistic skills necessary to produce one. Once modders have created or found the visual assets for a mod, they need only place those assets within the appropriate folders within the *OpenBOR* engine.

The most technical aspects of the mod lay in the programming of the characters and enemies. The *OpenBOR* engine has simplified this programming by creating a default text document which can be changed by modders before compiling their mod. Relying on the knowledge hosted on the *OpenBOR* wiki, modders can quickly learn how to create the underlying mechanics that control a character's health, collision detection, spawning cycle, and movement. With each of these clearly outlined in the wiki, modders can follow the instructions, save their data along with their art assets, and their mod is ready to compile as a Dreamcast disc image. Within the *OpenBOR* engine, Senile Team built an automated toolset for modders to compile their mods as a .cdi file. Once the .cdi file is created, the file can then be uploaded to a community forum or website, ready for distribution. Once uploaded, other members of the Dreamcast hacking and fan communities can access and download the .cdi file, burn it to CD-R, and play it on their console.

The original *Beats of Rage* engine created by Senile Team spawned its own fan culture and became the catalyst for fan creation of hundreds of game remixes in the form

of *Beats of Rage* mods. Their legacy of creating the *OpenBOR* engine generated a fan knowledge culture, one which shares all of the information necessary to engage in creative production for the modding the *Beats of Rage* engine. This open form of knowledge sharing is born as a direct result of the legacy left by those who first engaged in piracy practices on the console, ones which opened the Dreamcast to these new forms of creative production. What began as a practice centred on illegally copying and distributing commercial games released for the platform grew into a thriving creative community of fans engaged in a variety of game based creative practices which can be read as following the forms of hybridization associated with fan remix cultures.

Piracy practices centred on the Dreamcast served to de-sacralize the platform, opening it up to new forms of interaction through the exploration and exploitation of its unique technological properties. Fan creative practices positioned the platform as catalyst for the creation and exhibition of new forms of fan creativity. Charting the lineage of these practices, from commercial expatriation to piracy and remix practices, is to chart the transformations of fans and their relationship to the platform.

CONCLUSION

The legacy of game piracy and fan based creative practices on the Dreamcast is one that can be traced through participatory game culture as well as the video game industry. The creative practices outlined in my analysis encompass the origins of creative homebrew development for the Dreamcast. The knowledge produced by these creators has spawned original games for the console in addition to the myriad of Audio Remix and *Beats of Rage* mods. These user friendly forms of creative production lead Dreamcast fan creators to explore their own creative capacity, gleaning knowledge from the community in order

to create new works. Over time, the Dreamcast has seen not only the creation and distribution of game titles that play on the console proper, but also an emerging scene of homebrew mini games developed for the Visual Memory Unit, and software emulators which allow gamers to play game files from other abandoned gaming consoles on the Dreamcast, including the Nintendo Entertainment System, the Sega Genesis, and more.

However, these productive fan communities centred on the Dreamcast are not the sole examples of this practice within active platform based fan production. A cursory search of online communities centred on similar creative endeavours for other abandoned gaming consoles reveals that these practices are common to nearly all abandoned gaming consoles. *PSX-Scene.com* is the locus for fan developers creating hacks, mods, and games for a number of abandoned Sony gaming consoles including the Playstation One and the Playstation Portable. *Nesdev.net* is a site which houses tutorials, tools, and other resources for fans wishing to create their own games for the Nintendo Entertainment System, now considered a vintage console, having been expatriated from the consumer market over 20 years ago. These sites offer examples of parallel practices by other platform specific subcultures, some of which predate those centred on the Dreamcast. By investigating these practices, we can see that the conditions of development vastly differ from those explored in the platform studies literature.

Platform studies has narrowed its investigation to sanctioned development practices, which reinforce proprietary technology manufacturing and closed licensing strata. In order to create works for these platforms under this industrial model, a developer had to possess the privileged position of being employed by a console manufacturer (developing what are known as “first party games,” or games developed by console manufacturers), or one of its software licensees. However, the literature does discuss some of the labour conditions under which these acts of creative computation were accomplished. In *Racing*

the Beam, Bogost and Montfort discuss the conditions under which Atari programmers created games for the VCS, more specifically how Atari management refused to allow game programmers, who at the time "were responsible [...] for every aspect of a game's production" (Bogost & Montfort, 2009, 81), credit for the creation of their games. This sparked the notable rise of the "easter egg" through Warren Robinett's secret act of protest embedded within the game code of Atari's *Adventure* (1977).

The creative practices of fan hackers and modders, however, are not bound by the constraints of corporate production models. The game developers under corporate management of their work are bound by the guidelines of their parent company, where knowledge is exclusive to those working from within. Under this development structure, there is very little that sanctioned creative practitioners can do to alter their relationship to the platforms they are developing for. As much as gaming companies lock consumers out of deeper interactions with their platforms, so do they lock developers into strict channels of interaction through their development practices. While the bulk of investigations within the field focus on these industrial models of creation, it is clear as to why the underlying thesis of these investigations situates platforms as fixed objects within culture.

The work that fan pirates, hackers, and modders accomplish rips open the closed nature of these platforms, through their own means and methods, thus bypassing the prescribed methods that originate within industrial models of game development. By creating these unsanctioned works and sharing the tools and knowledge to accomplish the creation of these works, these practitioners subvert the proprietary ideology of the black box, shrug off their reverence for the closed platform, and integrate it into their practice as a creative tool. Once abandoned by its parent manufacturer, a platform becomes a device that is no longer sacred, but devalued, until it is recuperated by these fan practitioners. Active fans lift abandoned gaming consoles out of their post retail

commodity state, making these platforms a site for continual creative production, rather than the locus for retro gaming fetishization.

While homebrew communities centred on creating works for abandoned gaming consoles continue to thrive, these subcultures have faced challenges to their practices by contemporary console manufacturers. In the contemporary video game market, video game consoles become increasingly closed to the kinds of interventions discussed in this thesis. Through the introduction of the own propriety operating systems (also known as firmware), manufacturers can negate hacks that exploit gaming systems by imposing mandatory firmware updates for their consoles on their consumers. These updates force users of these platforms to conform with interacting with the system in the prescribed manner determined by these companies.

While largely leaving abandonware to fan hackers, pirates, and modders, video game corporations have pursued those attempting to hack or modify contemporary consoles with litigious vigour. Perhaps the most notable example of this backlash against console hackers is Sony's prosecution of George Hotz and Alexander Egorenkov, who found the means whereby to circumvent the digital locks on Sony's Playstation 3 console. Sony sought criminal charges against both men for publicly posting information which enabled users to install a homebrew operating system known as OtherOS onto the Playstation 3, an operating system which allowed the playback of pirated games, media, and homebrew software. Had these hackers been tinkering with abandoned devices, it is clear that they would not have even garnered the attention from Sony which led to these lawsuits. With subsequent generations of gaming consoles since the demise of the Dreamcast, console manufacturers have continued to pursue increasingly proprietary methods to locking users out of deeper interactions with their platforms.

However, in light of active fan practices encompassing the modification of games (both sanctioned and unsanctioned practices), gaming companies such as Sony, Microsoft, and Nintendo have, in recent years, been integrating such practices into several of their game franchises. Included with Sony's *Little Big Planet* (2008) are level editing tools so that gamers can create their own playable levels within the game, and then share them online with other players through the proprietary intranet that is the Sony Playstation network. Nintendo's *WarioWare DIY* (2009) features the tools and integrated step by step tutorials that teach players how to create their own micro games, which last only several seconds. These mini games can then be uploaded to Nintendo's *WarioWare DIY* site and can be downloaded by other owners of the game. More recently, Nintendo's *Animal Crossing: New Leaf* (2013) allows players to create their own clothing, artwork, objects, and characters to populate a virtual town. These assets can then be sold online to other players of the game in exchange for virtual currency known as "bells". Finally, Microsoft's *Halo* (2001) franchise contains tools for players to create their own multi-player map levels, which can then be shared only via Microsoft's Xbox Live online service. While there appears to be an increasing acceptance and distribution of tools which enable players to create their own content on these platforms, these games and their parent devices still lock users into specific channels of production and distribution.

One of the primary challenges of maintaining the content created by these fans is born out of the industry's perpetual release of sequels and subsequent generations of platforms. As new platforms and sequels emerge, the previous titles and devices become expatriated from the support structures of their parent companies, and the content created by gamers will also lose support. Unless saved locally on a console's internal storage device, fans will lose the products of their creative labour once these consoles are abandoned. This process elicits deeper questions about the relationship between productive fans and the

corporations that produce these games. Where fan hackers and modders claim authorial credit over the works they produce, fan makers using these integrated sanctioned toolsets inside of popular games do not possess the same privilege to do so.

Fan hackers and modders working on abandoned platforms, however, are not bound to these same restrictions and limitations set by these in-game level design procedures. The community of fans also archives their work on the web, so that not only is the content available, but also is the knowledge needed to produce the content. In this regard, fan hacking cultures resist the narrative of innovation and upgrade embedded within gaming culture, as well as the proprietary practices in which the gaming industry engages in. In spite of creating works derivative of other game and media franchises, these practices situate themselves as critical interventions directed at closed copyright regimes and top-down technological locking and control systems.

Dreamcast fan pirates, hackers, and modders stand in contrast to other categories of active game fan audiences who create work through sanctioned methods. While the study of other such platform specific subcultures is necessary to provide a large picture of the methods and motivations behind these practices, my case study has offered initial insights into the means by which fan consumers alter their relationships to these platforms. By altering their relationships to digital platforms, and gaining a deeper understanding of their inner operations, fan hackers and modders both resurrect and re-contextualize abandoned digital platforms. As abandonware, these platforms become devices to be cracked open, exploited, and explored, thereby becoming part of the digital toolkits of technologically advanced fan practices that follow in the footsteps of the larger legacy of participatory cultures spanning all media.

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